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Practical Considerations

IN THE CONSERVATIVE TREATMENT OF

FRACTURES OF THE PELVIS AND LOWER EXTREMITY.*

A Course of Four Lectures delivered for the University of London at St. Bartholomew's Hospital

BY SIR WILLIAM I. DE COURCY WHEELER, M.D. DUB., F.R.C.S. IREL.,

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LECTURE I.

IN these lectures I will allude only to the management of cases of fracture of the lower extremity, directing my remarks to those who will have to deal with them under conditions where elaborate apparatus cannot be obtained by a nod, where highly skilled consultants are not always available, and where the results of after-treatment depend largely upon the doctor himself.

FRACTURES OF THE PELVIS.

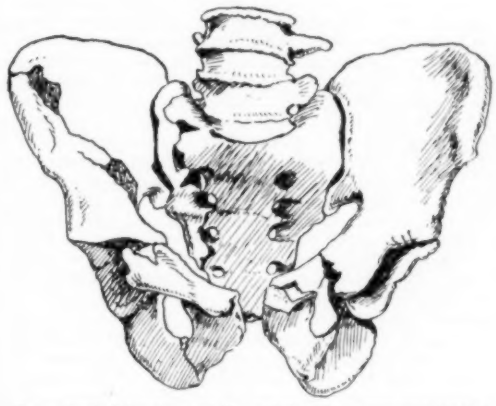
General Considerations.—When I was a student I was taught by the late Prof. E. H. Bennett—a really great authority on the subject of fractures—that extensive fractures of the pelvis were rare and that recovery seldom followed. Twenty-five years have elapsed. Under modern conditions both statements must be amended. Fractures of the pelvis have increased in frequency with the development of industrial machinery and rapid transport, for the crushing injuries associated with accidents to motor-cars, aeroplanes, and those employed in the modern factory supply us in bulk with this morbid material. Nor is the former gloomy outlook justified to-day, for surgery has not lagged in the race, and injuries contemplated with awe by our predecessors are confronted without misgiving and treated with success by modern methods.

Figures given by older authorities, such as Von Bergmann, Mikulicz, and Bruns, indicate that fractures of the pelvis constitute only 0·3 per cent. of all fractures. From my own experience alone the percentage appears to be greater. To illustrate these lectures I had no difficulty in recalling seven comparatively recent cases, without going through the hospital records. It must not be taken for granted that fractures of the pelvis arise only from severe injuries. Cases have been recorded from a slight fall on the hip, and death has followed in such cases from visceral injury and peritonitis.

In Malgaigne's classical double vertical fracture, the flanges of the ilia are approximated, the anterior portion of the pelvic arch breaks, and posteriorly there is either separation of the sacro-iliac joint or fracture of the ilium vertically downward from the crest to the greater sciatic notch (Fig. 1). The fracture in front is often on one side and the fracture behind on the other. When one side of the pelvis is thus broken away from the rest of the bone it and the attached lower extremity are necessarily connected with the rest of the body only by the soft parts which unite the pelvis to the spinal column and trunk. These soft parts are liable to severe stretching, laceration, and other injuries, which will be mentioned later on. The symphysis pubis or the sacro-iliac joint may be torn asunder, and, in a few cases, separation has occurred both at the symphysis and at the sacro-iliac joint. Separation of all three pelvic joints, not associated with fracture, is an injury the existence of which is doubtful, but I have seen a case with Dr. Gibbon FitzGibbon, Master of the Rotunda, in which there were very wide independent movements of one side of the pelvis upon the other due to laxity of the ligaments of all three joints, with no history of injury and not connected with pregnancy.

Of the isolated fractures of the pelvic bones which do not break the continuity of the pelvic ring, fracture of the acetabulum is the most interesting. I have in Mercer's Hospital at the moment a case of dorsal dislocation of the hip which, owing to a fracture of the posterior rim, slipped out of place after several reductions. The reduction was subsequently made by direct extension and swinging movements and maintained in position by fixed extension in a Thomas splint. This is one of the two common types of fractured acetabulum. The second type is illustrated in the case of a man admitted into Mercer's Hospital in 1909 after a severe injury to the hip. An impacted fracture was diagnosed, but X ray photographs showed the head of the femur driven through the acetabulum into the pelvis.

FIG. 1.



Comminuted fracture of the pelvis. (Spencer and Gask.)

In the first group of cases the fracture of the rim is associated with backward dislocation of the femur, and the symptoms are those of dorsal dislocation with difficulty in maintaining reduction. In the second group the head is forced into the acetabulum, causing fracture; sometimes the head passes through the fracture into the pelvis, sometimes not. The diagnosis is, in consequence, sometimes easy and sometimes difficult. In the more severe type the trochanter is less prominent than normal, the shortening is slight or absent; there is, of course, severe pain, and motion is restricted in every direction.

In differentiating between fracture of the acetabulum and fracture in the region of the neck of the femur, it will be remembered that in fractures of the neck from severe violence the limb lies extended and usually rotated outwards, and that impaction comminutes and makes the trochanter prominent. In fractures of the acetabulum with penetration of the head of the femur, the trochanter is much less prominent, but the difference may not be sufficient to make a diagnosis. In both conditions there is usually absolute loss of function. In most cases help may be obtained by making a rectal examination, but most surgeons will reserve judgment until an X ray photograph has been obtained.

In the one case of central dislocation through the acetabulum into the pelvis which I have seen reduction was impossible, but a fairly good functional result followed. The man, on leaving hospital, was able to continue his occupation as a hackney car driver.

Amongst the seven cases to which I have referred is one of isolated fracture of the sacrum and fracture of the coccyx in a child of 12. She fell from a swing on her sacral region. The interest in this particular case was the absence of symptoms except for some local pain. The patient was brought in casually for examination three weeks after the injury. An X ray

* All the cases referred to were illustrated by lantern slides.

photograph showed a transverse fracture of the sacrum between the third and fourth segments without displacement. She was seen four years later and had no pain or trouble of any kind.

When displacement of the fragments occurs the injury is extremely painful and some of the sacral nerves are likely to be involved. There may be also interference with defæcation and urination in some cases due directly to the displacement of the fragments, in other cases to paralysis following injury to the sacral nerves. The displacement of the fragments can be felt per rectum, and under an anæsthetic the alignment can sometimes be restored. Fractures of the sacrum alone are very rare.

Fractures of the coccyx, owing to the mobility of the bones, are also extremely rare, and are of importance owing to the probability of subsequent coccydynia, necessitating removal of the bone. Fractures of the ilium are not uncommon. They involve the upper expanded portion, including the crest, and cases are reported in which the anterior superior, and inferior and posterior spines have been torn away by muscular action. With the body bent forward and the thighs flexed upon the pelvis, there is sufficient muscular relaxation to detect a fracture, and a good X ray picture can be obtained by placing the injured side upon the plate and passing the rays obliquely from before backwards. In treating these fractures care must be taken not to press the fractured portion of the ilium unduly inwards.

Isolated fractures of the ischium are extremely rare. Many standard authorities are silent upon this subject. Bennett[1] described a case in which the ischium was detached from the left innominate bone by fracture with displacement backwards and upwards. The great sciatic notch in this case was reduced to a mere slit, and the displaced bone was united to the side of the sacrum. The head of the femur participated in the displacement.

Treatment.

The treatment of fractured pelvis resolves itself into treatment of the injured soft parts and of the fractured bones.

INJURY TO THE URETHRA, BLADDER, AND SOFT TISSUES.

The urethra and bladder are the organs which suffer most frequently and, as compared with these, injuries to other parts are of little practical importance. The rectum and vagina may be injured, or the large veins of the pelvis may be torn—an accident rapidly followed by death. In a case recorded by Bell and Fischer a diffuse traumatic aneurysm of the gluteal artery developed after fracture of the pelvis. Bryant reported three cases in which thrombosis of the external iliac artery followed a fracture of the pelvis. This was due to over-stretching of the artery by the displaced fragments. The internal and middle coats had been torn, the external coat remained intact. In one of these cases gangrene of the leg developed.

Large extravasations of blood after injury to the pelvis may undergo suppuration. The sciatic and obturator nerve may be crushed, with subsequent prolonged and intractable neuralgia. It is, however, the complication of rupture of the bladder and rupture of the urethra, or of both, which is of most practical importance and requires urgent attention. If such complications are recognised without delay and treated along rational lines, the immediate and ultimate results are not at all so depressing as many would have us believe.

Rupture of the Bladder.

Rupture of the bladder may follow injury apart altogether from fractures of the pelvis, or the rupture may be associated with fracture of the pelvis without being actually produced by the broken bones. The site of the lesion may be either above or below the peritoneal reflection. If below, the tear is on the anterior surface, either in an accessible position or out of reach low down in the neighbourhood of the trigone. If the rupture is intra-peritoneal, it is placed more often on the fundus of the bladder or posteriorly. According to the position, the urine either escapes into the space of Retzius and percolates towards the anterior abdominal wall, or it is freely extravasated into the peritoneal cavity.

In the surgical works of Spencer and Gask, to which I am indebted for much information on the subjects under review, it is stated that wherever stale urine spreads it produces inflammation and sloughing. This statement applies, however, as is made clear in the text, to the more familiar types of extravasation following the ulceration and rupture of the urethra behind an old-standing stricture. The urine under such circumstances is foul and infected. On the other hand, the onset of peritonitis, cellulitis, and suppuration, with accompanying rigors, rise of temperature, and general symptoms of toxæmia, may be delayed for a period of even two or three days in cases of leakage from the urinary bladder containing healthy urine.

I recollect a case which occurred in a casualty clearing station in France, in August, 1916. The patient had fallen from the roof of a house, fractured his jaw and both forearms, and, so far as it was possible to ascertain, had sustained some fracture in the region of the pubes. He had abdominal tenderness, and made ineffectual attempts to pass water. Ruptured bladder was diagnosed, but on passing a catheter a full quantity of urine was withdrawn and it contained blood. The amount withdrawn appeared to us to justify delay. The abdomen became more rigid in a few hours, but his pulse remained between 80 and 90, and there was no vomiting nor rise of temperature. The inability to urinate continued, and a catheter was passed every four hours. Blood was present only on the first occasion, and urine was withdrawn at every catheterisation in moderate quantity. The patient's aspect became gradually worse. Rigidity was more marked, vomiting had commenced, and early signs of peritonitis became evident.

When I operated upon this patient 24 hours after admission a large rent was found on the fundus of the bladder, and the abdomen was full of urine without odour. The rent was stitched and the abdomen closed without drainage. A catheter was passed while the abdomen was still open, and it became obvious that on each occasion the catheter had gone through the rent in the bladder and the urine had been drawn from the peritoneal cavity. The first diagnosis on admission had been correct, but the result of catheterisation was so confusing that there was uncertainty and delay. Notwithstanding the multiple injuries and the lapse of 24 hours before operation, the patient did well.

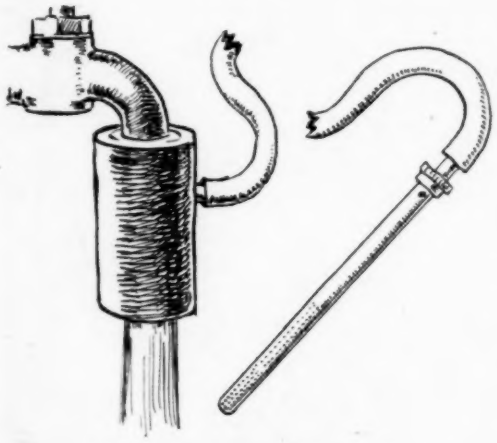
The diagnosis of ruptured bladder is not as a rule difficult. There is always a strong but ineffectual desire to urinate. A catheter passes freely through the urethra, but only small quantities of blood-stained urine return. To make a diagnosis, some authorities suggest that a measured quantity of fluid should be injected and the quantity returned carefully noted and checked. The disadvantages of such a procedure are obvious. If the injected fluid leaks through a rupture into the peritoneal cavity the desired information is obtained, but the shock from which the patient suffers becomes more pronounced. If it returns in full quantity it may have passed through an extra-peritoneal rupture into the space of Retzius and return without appreciable diminution of quantity. Under such circumstances the surgeon is misled.

With an inability to void urine, associated with the free passage of a catheter and the return of only small quantities mixed with fresh blood, the case is one for immediate operation. The differential diagnosis between intra- and extra-peritoneal rupture is difficult in the presence of shock, tenderness, and rigidity, but the treatment is the same. Some suggest that the first exploration should be above the pubes, below the peritoneal reflection, but I agree with Keyes, who recommends the peritoneum to be opened in the first instance. The intra-peritoneal rupture is more common, and, furthermore, in dealing with extra-peritoneal injury in the presence of blood and extravasated urine and an empty bladder, sufficient room can scarcely be obtained by the usual extra-peritoneal suprapubic route.

[1] Trans. R.A.M. in Ireland, 1887.

If the abdominal cavity is found to contain urine and blood, it is syphoned off through the simple aspirator (Fig. 2) now used largely for the withdrawal of accumulations of fluid of any origin, and the rent in the bladder is closed and covered, if possible, by a piece of omentum. A small corrugated rubber drain is passed to the line of suture. A self-retaining rubber catheter is introduced per urethram.

FIG. 2.



Aspirating pump attached to water tap.

In some of the earlier cases described by Walsham death followed operation owing to leakage at the point of suture, and on this account some recommend that fluid should be injected through the urethra to make sure of a water-tight closure while the abdomen is still open. I think such a procedure adds to the time and leads to confusion during operation, and that the use of a self-retaining catheter is a sufficient safeguard. If, on the other hand, it is found that the rupture is not into the peritoneum, the abdominal contents are packed away, and the injury usually will be found on the anterior surface of the bare area of the bladder and should be sutured in the ordinary way. A tongue-shaped portion of omentum (Fig. 3) pulled through the line of peritoneal reflection is laid flat over the surface to secure a firmer union. The space of Retzius is drained and a self-retaining catheter introduced.

FIG. 3.

Opening in bladder covered by omentum.

In certain cases where the rent is inaccessible for accurate suture and where bleeding has been free, suprapubic drainage with a tube in the bladder is the operation of choice.

Rupture of the Urethra.

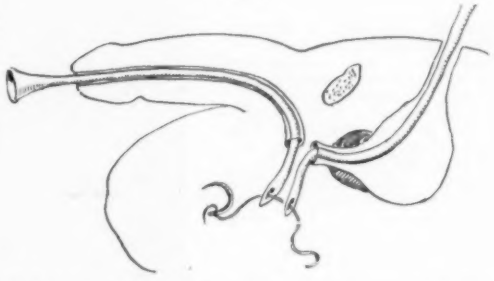
I will give two examples of recent cases of fractured pelvis brought about by a horse rearing and falling backwards on the rider, in which the urethra was ruptured. They illustrate the difficulties of treatment under one set of circumstances and the satisfactory outcome and ease of operation when conditions are favourable.

In the first case the patient, aged about 28, was injured in the manner indicated early in September, 1921. He was seen late at night in the country, after an accident in the early morning. He had been making intense but ineffectual efforts to pass water, and there was consequent extravasation. It was impossible to pass a catheter beyond the region of the triangular ligament. Urine and blood were penetrating into the perineum, scrotum, and from the space of Retzius forwards towards the anterior abdominal wall. Both layers of the triangular ligament were apparently torn.

The operation was of the emergency variety. The bladder was opened above the pubis and drained, and free incisions were made into the infiltrated tissues of the perineum. After ten days the patient was brought to Dublin, and an X ray photograph showed a double vertical fracture involving both rami of the pubes on one side and the region of the sacro-iliac joint on the other. The acetabulum was involved, a complication which subsequently led to bony ankylosis of the hip. Eleven days after the accident, in the presence of many drainage incisions, a successful attempt at secondary suture of the urethra was performed by a colleague, who kindly took charge of the patient during my unavoidable absence from Dublin.

An operation after such a lapse of time and in the presence of infection is often very difficult and unsatisfactory, and is followed usually by traumatic stricture. The hip-joint, which was involved by the fracture and open to infection, was exquisitely painful, a condition which added considerably to our difficulties. Extension and abduction were employed until the patient was discharged from hospital five months after admission.

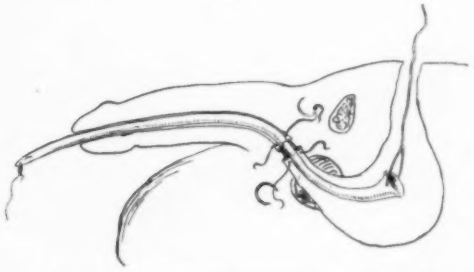
FIG. 4.



Catheters passed and made to point in perineum. (The instrument passed in retrograde fashion should be metal.)

I found it necessary to pass sounds frequently, generally under an anæsthetic, for nearly two years. Four weeks ago I received the following letter from this patient. He had failed to report regularly for over a year: "Sounds were last passed on me on Oct, 8th, 1923 (two years after the injury), and the last abscess was opened in November, 1923. Since then I have had nothing done, and have been very well indeed. I cannot yet manage to ride, but find every time I try I can manage better. There is a great strain when my legs are across a horse. I play a fair amount of golf and dance a bit, and I have great hopes of riding again some day." From this letter it would appear that the ankylosed hip is the main disability. It is a satisfactory report three and a half years after so serious an injury.

FIG. 5.



Urethra sutured with catheter as a guide. Note the thread coming through suprapubic wound.

I am indebted to Dr. J. V. O'Hagan for the later history of this case.

The second case arrived in hospital a few hours after his accident, and illustrates the happy results which follow when surgical interference is early and when ideal treatment is possible.

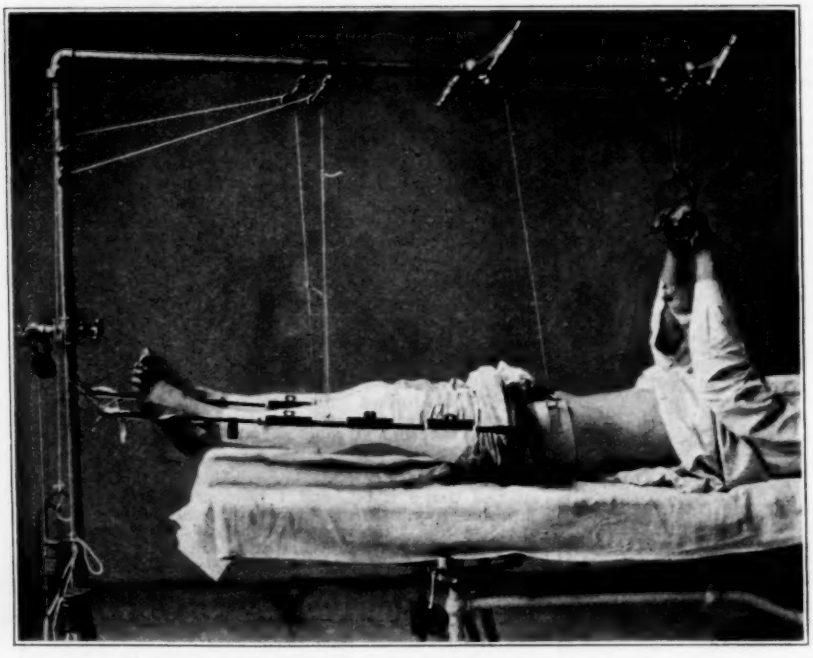
A young officer fell with his horse on top of him while hunting. The pubes appeared to be pulled apart, and X rays showed a stellate fracture along one margin of the joint. Again, there were all the signs of urethral rupture—a great but ineffectual desire to urinate, a desire which his medical practitioner in the first instance wisely warned him to curb. Efforts to pass a catheter completely failed.

The line of treatment adopted is the line I would recommend in cases seen early. Instead of opening up the perineum through infiltrated and bruised tissues in search of the proximal end of the urethra, it is best, I think, to open the bladder in the first instance, and to pass a catheter in retrograde fashion down through the proximal portion of the tear. An assistant holds this instrument while the end of it is exposed through a perineal incision. A rubber catheter is now passed through the penile portion, and the eye is attached by a silk thread to the instrument passing from the bladder. The bladder instrument is withdrawn, pulling with it the rubber catheter, the eye of which now appears through the suprapubic wound. The urethra is then accurately sutured end to end with the rubber catheter as a guide (Figs. 4 and 5). A good headlight is essential for accurate work. The perineal wound is cleansed, preferably with some of the chlorine preparations (such as "Fecto") or treated with bipp. It is then sutured closely, a small superficial rubber drain being left in situ. A long thread is attached to the point of the catheter coming through the suprapubic opening before it is gently manœuvred into the bladder by a pull on the penile end; this thread may be conveniently tied to one of the skin sutures. The bladder is drained by a small suprapubic tube. At the end of four or five days a fresh catheter is attached by a stitch to the meatal end of the one already in position, and by pulling on the suprapubic thread the new catheter takes the place of the old. This process can be repeated for a fortnight when a catheter is passed in the ordinary manner and the suprapubic wound allowed to close.

FIG. 6.

Double vertical fracture in which there were no indications of bony injury before radiograph was taken.

FIG. 7.



Convenient arrangement for treatment of pelvic fractures.

The patient so treated was admitted to hospital in January, 1924. He was up and about at the end of five weeks, and left hospital six weeks and two days after admission. On a few occasions afterwards an instrument was passed without difficulty, and he rejoined his regiment apparently well.

FRACTURE OF THE PELVIS WITHOUT DISTINCTIVE SIGNS AND NO COMPLICATIONS.

The third illustrative case shows a double vertical fracture in a lady who was unfortunate enough to be in a motor-car when it overturned, and who had apparently no injury to the soft parts beyond bruising and ecchymosis. At the first

examination she stated she felt bruised and sore, and had some pain in her back. Movements of her knees and hip-joints did not cause pain; no shortening could be found. The crests of the ilia were in normal position; pressing them inwards caused no special pain. Rectal examination revealed nothing, and I came to the erroneous conclusion, in agreement with the local doctor, that there was no gross bony injury. An X ray examination was made as part of the routine examination, and a fracture was found on the left side, splitting the ilium from the lower angle of the sacro-iliac joint to about the middle of the crest (Fig. 6). The pubic arch on the right side was broken above and below the obturator foramen. The patient was kept in bed for six weeks, and after two months was able to move about apparently well. This lady wrote to me a few weeks ago as follows: "I am glad to say I feel absolutely no ill-effects in any way. I am not the slightest bit lame, and can dance all night; I have danced four nights this week into the early hours of the morning. I had not ridden for eight years, and rode for the first time recently, and went for a short gallop about a mile, and never felt anything. In fact, I can do anything I ever did before."

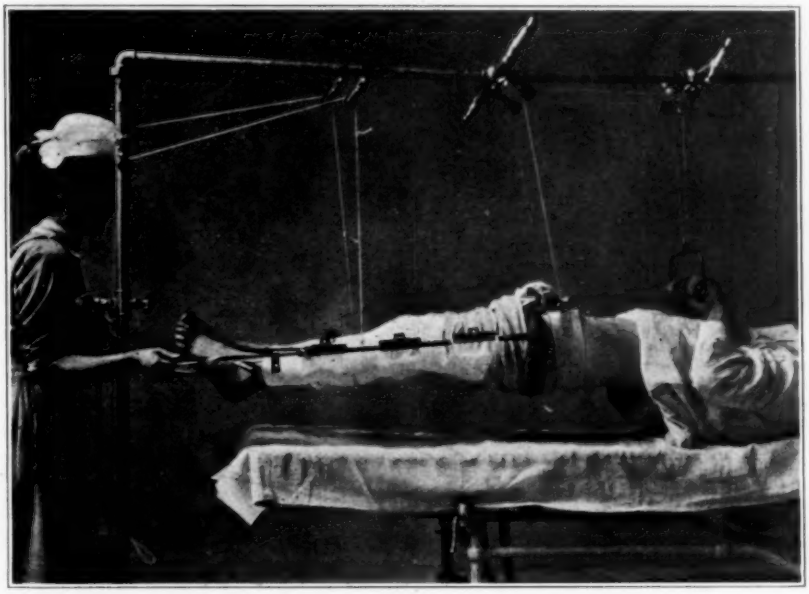
With regard to the treatment of fractured pelvis apart from complications. When a double vertical fracture exists, or when the bones are much comminuted, some effort must be made (1) to reduce displacements, (2) to give stability to the fragments, and (3) to assist nursing.

The muscles attached to the broken bones can be relaxed to some extent by flexing the leg at the hip and at the knee (Fig. 7). Both legs should be slung in Thomas splints in this position. (The splints in the illustrations should be shown bent at the knee.) A girth or strong bandage is strapped tightly round the pelvis between the trochanter and the ilium. Strong cords are attached to a ring on each side of the girth (Fig. 8) and passed over pulleys towards the head of the bed, where they are connected to a handle which the patient grasps when changing position. The raising of the pelvis for nursing purposes is thus rendered easy. If one side is displaced upwards, extension is applied to the corresponding leg by weight and pulley. As an alternative the double Thomas frame, as recommended by Jones, leaves little to be desired.

Isolated fractures of the pelvis must be treated intelligently. In the case of fracture of the posterior rim of the acetabulum, the dislocated hip, as already stated, can be easily reduced by direct extension with the patient lying on the floor under an anæsthetic. Extension can be maintained, and recurrence of the dislocation prevented, by the application of a Thomas splint with fixed extension. Cases have been described where a central dislocation of the hip with fracture of the acetabulum have been successfully reduced and treated. No routine manipulation can be described. Ordinary traction in the long axis of the limb and slight abduction may succeed. Lateral traction is indicated, but if the head has perforated the pelvis it will be necessary forcibly to disengage it from the encircling acetabulum before lateral traction will become effective.

In the rare case of fractured ischium, which involves the acetabulum and in which the head of the bone is drawn towards the sacrum, obliterating the sciatic notch, heavy weight and pulley extension seems the obvious remedy.

FIG 8.



Patient raised by his own aid for nursing purposes.

SOME OBSERVATIONS ON THE DOSAGE OF ULTRA-VIOLET RAYS IN ARTIFICIAL SUN TREATMENT.

BY ALBERT EIDINOW, M.B., B.S. LOND., M.R.C.S. ENG.

(From the National Institute for Medical Research, Mount Vernon, Hampstead.)

THE general method adopted in the treatment of disease by means of heliotherapy or "artificial sunlight" consists of the gradual exposure of the body to a source of light emitting ultra-violet rays. Dr. Leonard Hill has shown, by means of the acetone methylene-blue light gauge, that there is a great variation in the intensity of ultra-violet rays at different times of the day and at different parts of the country. Many kinds of "artificial sun lamps" are being used in various clinics where light treatment has been adopted, all of which vary considerably in their electrical energy and in the ultra-violet energy they radiate. These facts show that it is very difficult to compare or contrast the results obtained at the various clinics, for if patients are exposed to light for a definite period of time the actual quantity of the ultra-violet energy they receive must vary enormously.

The original work of Widmark [1] showed that the ultra-violet rays produced a biological action in the skin. Finsen, Freund, and Hamer carried this research further, and have conclusively proved that the ultra-violet rays which have the power of producing sunburn possess very great therapeutic value. In

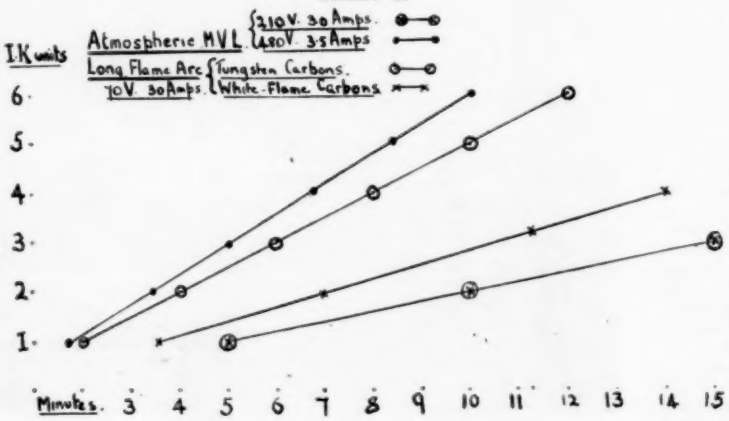
[1] Scand. Arch. f. Phys., 1889, i., 264.

the practical application of light no isolated portion of the ultra-violet spectrum can be usefully employed, as there are no means available at present to produce individual bands of the ultra-violet spectrum of sufficient intensity.

Dosage of Ultra-violet Light Sources.

As a result the whole range of the spectrum, including heat, luminous, long and short ultra-violet rays, is employed, and the mass effect of the rays must be considered. Up to the present very little attention has been given to the question of dosage of ultra-violet light sources, and many workers consider this superfluous. The individual variations in sensibility to light make it impossible to fix a standard dose, even with a standard source of light. From this point of view it is indeed very difficult to determine the most suitable method for administration of light treatment, and further to decide if any harmful effects can take place from excessive dosage with light. Two important facts must be considered before accurate dosage with light can be established: (1) The quantity of ultra-violet rays which have biological action, emitted from a source of light; (2) the reaction of the skin to standardised doses of light.

CHART 1.



According to the investigations of Hausser and Vahle,[2] the ultra-violet rays of about 3130–2530 λ have the power of producing erythema of the skin. They exposed small areas of the skin of the arm to isolated ultra-violet rays by means of a large quartz spectroscope. The energy of the rays used was taken of equal value as tested by means of a sensitive thermo-electric couple. These investigators gave the following scale of skin sensibility estimated in relation to the degree of erythema produced:—

Wave length in λ.	Sensibility. Per cent.	Wave length in λ.	Sensibility. Per cent.
3130	4·5	2800	28
3020	58	2650	19
2970	100	2530	16
2890	30		

Rays shorter than 2530 λ also produced a faint erythema.

H. v. Schrotter[3] has shown that light from 3600 λ was effective in producing erythema; Leopold Freund[4] claimed that light from 3900 λ was effective; but these observations cannot be confirmed. Therefore, according to Hausser and Vahle's investigations, 69 per cent. of light erythema is caused by 3020–2970 λ. Johansen[5] placed this percentage as 72. Dr. L. Hill has shown that when the skin of the forearm is exposed to light through a quinine filter (which cuts out all rays shorter than 3300 λ) no erythema developed after one hour's exposure. Further, he exposed his arm to the cadmium spark through a quartz spectroscope, and definitely showed that the rays 2750 and 2570 produced erythema, while 2320 and rays shorter than this failed to do so.

These facts clearly demonstrate that dosage of the ultra-violet must be primarily focused on the intensity of the wave-lengths about 3000–2500 λ, since this group of rays correspond to the rays which have biological action on the skin and on the therapeutic value.

Up to the present moment four methods of dosage have been recorded: (1) Bering-Meyer's[6] iodine method is based on the separation of free iodine from an acidified potassium iodide solution by means of light. Hackradt[7] determined the iodine colorimetrically with the Authennith Konisberger colorimeter. (2) The Eder-Hecht Graukeil photometer was introduced by Freund,[7] and is based on the sensitiveness of silver photographic paper through a graded gelatin wedge. (3) Fürstineau's[8] aktinometer is based on the changes in the electrical conductivity of selenium on exposure to light. (4) P. Keller's[9] modification of the Bering-Meyer's iodine solution. He added starch and varying quantities of sodium thiosulphate to the potassium iodide solution and obtained a blue colour on irradiation. He has biologically standardised this solution against skin erythema.

All these methods, except that of P. Keller, do not bear any definite biological relation to skin erythema. All of them give reaction with the luminous and long ultra-violet rays, and are not specific in their reactions to the erythema-producing rays—shorter than 3000 λ.

The *methods of dosage of light* which have been adopted in the present research consist of: (1) Biological standardisation of sources of light; (2) test of sensitiveness of the skin to light; (3) the effect of a test dose of light on the bactericidal powers of the blood.

The Method Employed in Biological Standardisation of Sources of Ultra-violet Light.

Dr. L. Hill and the writer have shown that when infusoria are placed in a shallow water-cooled quartz cell and exposed to a source of ultra-violet rays they lose their motility and are finally killed. The time taken to produce this action depends upon (1) the distance from the source of light, and this corresponds to the law of inverse squares; (2) the temperature[10]; (3) the intensity of ultra-violet rays shorter than 3000 λ present in the source of light.

The bleaching of a standard solution of acetone methylene-blue corresponds to the action of light on infusoria, but proceeds at a slower rate. The time required to bleach a standard blue solution No. 9 of acetone methylene-blue to No. 8 corresponds to two to three times the time required to kill infusoria under similar conditions on exposure to the mercury-vapour lamp and four to five times that required on exposure to the carbon arc. Recently T. A. Webster prepared a rapid solution of acetone methylene-blue (No. 4), which was completely bleached in the same corresponding time to that taken to kill infusoria. Unfortunately, this solution is of an unstable

[2] Strahlentherapie, 1923, xiii.
[3] Ibid., 1920, xi., 634.
[4] W. Klin. Woch., 1912, No. 5.
[5] Strahlentherapie, 1915, vi.
[6] Ibid., 1912, i.
[7] Ibid., 1920, x.
[8] Ibid., 1921, xii.; D. med. W., 1920, No. 49.
[9] Strahlentherapie, 1923, xvi., 52.
[10] The biological action is accelerated with a rise in temperature within the biological mean of life of the organisms (5°–30° C.).

character. The time taken to bleach a standard solution of acetone methylene-blue and the time taken to kill infusoria, at a temperature of 18°–20° C. and at a distance of 30 inches—i.e., the distance at which patients are usually exposed to light—gives a very satisfactory index to the quantity of ultra-violet rays which have biological action present in a source of light.

If an area of skin is exposed to source of ultra-violet light erythema is produced after a latent period of four to six hours at the site of irradiation. The intensity of erythema corresponds to (1) the distance from the source of light—corresponding to the law of inverse squares; (2) the temperature—the action of the ultra-violet rays is accelerated by temperature; (3) the intensity of ultra-violet rays emitted from the source of light; (4) the susceptibility of the skin to light.

As a general working rule Dr. L. Hill and the writer have shown that an exposure of the normal white skin to a source of ultra-violet light, corresponding to twice the time required to kill infusoria under similar conditions, gives rise to a mild erythema. In this way the reaction of infusoria to light, the reaction of acetone methylene-blue solution, and the erythema of the skin after radiation have been standardised. All sources of light can therefore be standardised by means of these biological, chemical, and skin reactions, and the tests have a relation to each other.

The dose of light can also be expressed in terms of the time required to kill infusoria, each I.K. unit corresponding to the time required to kill infusoria, under the conditions in which the skin is irradiated. Table I. shows the I.K. values for (1) the long flame arc — 30 amps. + 75 volts with white flame carbons; (2) the long flame arc 30 amps. + 75 volts with tungsten carbons; (3) the atmospheric mercury-vapour lamp 200 volts + 3·2 amps. (K.B.B.); (4) the atmospheric mercury-vapour lamp (M.V.L.) 480 volts + 3·5 amps. (See Chart 1.)

TABLE I.

—	Voltage.	Amp.	Time taken to kill infusoria 30 in. distant.	Time taken to give faint erythema of skin.	I.K. units.
M.V.L.	480	3·5	1¼ min.	3¼ min.	2

TABLE Ia.

Lamp.	Voltage.	Amp.	Time taken to kill infusoria 30 in. distant.	Time taken to produce faint erythema (= 1–1·5 red)	I.K. units.
M.V.L. atmospheric	480	3·5	1¼ min.	3¼ min.	2
K.B.B.	210	3·2	5 „	10 „	2
Long flame arc, white flame carbons	75	30	3½ „	7 „	2
Long flame arc, tungsten carbons	70	30	2 „	4 „	2

Individual Sensitiveness of the Skin to Light.

When three small circular areas of skin, about half an inch in diameter, are exposed to light for three periods of time corresponding to 2, 3, and 4, infusoria killing units on erythema varying in intensity is developed at each area exposed. Individuals vary in their sensibility to these standard doses of light, and besides this, the skin of different parts of the body varies in its sensitiveness to light. As a general routine the abdominal skin one inch above the umbilicus was selected for testing the sensitiveness to light.

A black silk band was attached to the abdomen by means of pieces of tape. This band had three circular diaphragms, about half an inch in diameter, cut out at two inches distance from each other, and had a black silk flap attached, so that each area could be easily covered up. The abdominal skin was exposed over these small areas to the source of light for periods of time corresponding to 2, 3, and 4 I.K. units. The following day two or three circular areas of erythema could be observed at the site of irradiation. The degree of erythema produced was estimated by means of the Lovibond skin colorimeter. Of all the patients tested in this way most gave a reaction with doses corresponding to 3–4 I.K. units, and the degree of reaction was taken as an index of the general individual sensitiveness to light. The colour of a normal white skin usually corresponds to the red No. 1 and yellow 1·0 of the tintometer scale; the exposure to light for 2, 3, and 4 I.K. units gave a very faint erythema with the 2 I.K. dose which disappears rapidly; sometimes it is not visible after 24 hours. The 3 I.K. dose gave an erythema which

TABLE II.

—	Colour of normal skin. R. = red. Y. = yellow.	2 I.K.	3 I.K.	4 I.K.
		Erythema which developed after exposure to M.V.L. at 30 in.—		
		3½ min.	5 min.	7 min.
Tuberculous glands.	1·1 R. 1·0 Y.	2·3 1·0	3·0 1·0	3·5 + 1·0
Sinusitis.	1·2 R. 1·4 Y.	1·2 1·4	1·6 1·4	2·1 1·4
Lupus erythematosus.	2·0 R. 1·2 Y.	2·5 1·2	3·0 1·2	4·0 1·2
Asthma and eczema.	1·0 R. 1·0 Y.	1·0 1·0	1·4 1·0	1·9 1·0
Rheumatoid arthritis.	1·0 R. 1·0 Y.	1·4 1·0	1·8 1·0	2·0 1·0
Tuberculous ankle.	1·4 R. 1·3 Y.	1·6 1·3	2·4 1·3	3·5 1·3
Anæmia.	2·0 R. 1·1 Y.	2·5 1·1	2·8 1·1	3·1 1·1
Lupus erythematosus.	1·5 R. 1·0 Y.	2·0 1·0	3·5 1·0	4·5 1·0
Dermatitis herpetiformis.	1·1 R. 1·0 Y.	1·1 1·0	1·5 1·0	2·0 1·0
Chronic bronchitis and asthma.	1·6 R. 1·0 Y.	1·6 1·0	2·1 1·0	3·4 1·0
Osteomyelitis of rib.	1·2 R. 1·0 Y.	1·8 1·0	2·1 1·0	3·1 1·0
Scleroderma.	1·2 R. 1·2 Y.	1·2 1·2	1·6 1·2	2·5 1·2
Lupus erythematosus.	1·4 R. 1·0 Y.	1·4 1·0	1·6 1·0	2·5 1·0
Anæmia.	1·0 R. 1·1 Y.	1·0 1·1	1·6 1·1	3·5 1·1
Phthisis.	1·2 R. 1·0 Y.	2·0 1·0	2·5 1·0	3·0 1·0
Goitre.	1·1 R. 1·2 Y.	1·5 1·2	2·0 1·2	3·0 1·2
Colitis.	1·2 R. 1·2 Y.	1·4 1·2	2·0 1·2	2·5 1·2
Sinusitis.	1·0 R. 1·2 Y.	2·5 1·2	3·0 1·2	4·0 1·2
Colitis.	1·0 R. 1·0 Y.	1·3 1·0	2·0 1·0	2·4 1·0
Myocarditis.	1·2 R. 1·1 Y.	1·2 1·1	2·5 1·1	3·5 1·1
Lupus erythematosus.	1·2 R. 1·2 Y.	1·6 1·2	2·4 1·2	3·0 1·2
Pruritus ani.	1·3 R. 1·0 Y.	1·7 1·0	2·0 1·0	3·0 1·0
Rheumatoid arthritis.	0·9 R. 1·1 Y.	1·0 1·1	1·4 1·1	1·6 1·1
Tuberculous knee.	1·0 R. 1·0 Y.	1·0 1·0	1·5 1·0	2·5 1·0
Sinusitis.	1·4 R. 1·1 Y.	1·4 1·1	1·8 1·1	3·1 1·1

was marked and persisted for two to four days. The 4 I.K. dose invariably gave rise to an erythema which was followed by desquamation and pigmentation.

The Lovibond tintometer is a very arbitrary method of estimating the colour of the skin and in many ways it is tedious. Much depends upon the individual selection in comparing colours, and the illumination of the skin plays an important part. It is anticipated that a better and more accurate method of controlling reactions of the skin will be adopted shortly.

The reaction of the skin and the power to produce erythema and pigmentation does not follow the usual routine in infants up to the age of 3 years. The reaction to light in these cases appears to differ from the adult skin. In comparing the erythema produced by varying doses of light, the degree of redness with each dose is obvious and gives a ready means of estimating the sensitiveness of the skin and the reaction to the source of light (Table II.).

Effect of a Minimal Erythema Dose of Light on the Bactericidal Power of the Blood.

Dr. Leonard Colebrook,[11] Dr. L. Hill, and the writer have demonstrated that exposure of the human skin or that of animals (rabbits and pigs) to a source of ultra-violet rays produced an increase in the hæmobactericidal power of the blood. It is therefore possible to observe the effects of radiation of the skin by estimation of the bactericidal power of the blood. Following the results obtained from these observations on the effect of the test doses of light on the abdominal skin, the dose of light most suitable for production of an increase in the bactericidal properties of the blood can be determined. In most of these investigations the dose of light selected was that which gave rise to a mild erythema which persisted for one to two days and then disappeared. This dose usually corresponded to 3 I.K. units. The chest and back exposed to the dose of light selected, after carrying out the test dosage of the abdominal skin, usually showed a very faint erythema of the chest—a mild erythema of the back and a definite line of demarcation at the level of the iliac crest, at the zone between the normal and irradiated skin.

General Plan of Procedure.—Three small areas of the abdominal skin were exposed to the mercury-vapour lamp (480 volts and 3·5 amps.) for 3½, 5, and 7½ minutes respectively, at a distance of 30 inches. This corresponded to 2, 3, and 4 I.K. units. The following day these small areas of erythema of different intensity were observed at the sites of irradiation. By means of the Lovibond skin colorimeter the degree of erythema was estimated for each dose of light and was gauged in the manner shown in Table III.

TABLE III.

Colour of normal skin.		2 I.K.	3 I.K.	4 I.K.
		Erythema which developed after exposure—		
		3½ min.	5 min.	7 min.
Red	1·1	2·3	3·0	3·5 +
Yellow	1·0	1·0	1·0	1·0

All these areas irradiated show a definite erythema, although the 2 I.K. dose was faint. The dose of light selected for the bactericidal test was four minutes—i.e., between 2–3 I.K. units. From a series of investigations it has been found that patients who respond fully to all three doses of light, especially the 2 I.K. dose, are very sensitive to radiation. A sample of blood was taken by means of venepuncture and was placed in a sterile test-tube and defibrinated. The back and chest (to the level of the iliac crest) were exposed to two mercury-vapour lamps each 30 inches in front and behind the patient for four minutes. This corresponds to 2½ + 2½ I.K. units = 5 I.K. units. Two and a half hours after radiation a second blood sample was collected and defibrinated in the same way. The bactericidal power of the blood was estimated by means of slide cells, by the method described by Sir A. E. Wright, L. Colebrook, and E. J. Storer.[12] The next day results were recorded as given in Table IV.

TABLE IV.

Dilution.	W/6.	W/18.	W/36.	W/60.
Number of colonies of staphylococci which grew in each 50 c.cm. of blood before radiation at 2 P.M.	∞	74 ?	42	22
Number of colonies of staphylococci which grew in each 50 c.cm. of blood 2½ hours after radiation at 4.30 P.M.	0	0	0	0
Number of colonies of staphylococci which grew implanted with each 50 c.cm. of blood ..	1400	466	233	140

	Per cent.
Average hæmobactericidal power of blood at 2 P.M. (before radiation)	= 83
Average hæmobactericidal power of blood at 4.30 P.M. (2½ hours after radiation)	= 100
Increase in killing power of blood (2½ hours after radiation)	= 17

From a series of investigations of 125 cases on the effect of radiation on the bactericidal power of the blood, it has been shown that a mild erythema of the skin after radiation is usually associated with an increased bactericidal power. The normal bactericidal power of human blood against the staphylococcus is usually high, and similar results have been experienced when the blood is incubated with different strains of streptococcus and pneumococcus. Sir A. E. Wright and his co-workers attribute the rise in bactericidal power to the greater efficiency of the leucocytes. Radiation of the skin with the ultra rays which have biological action produces some change in the blood causing increased bactericidal function. In many of the cases investigated in which subacute inflammatory changes occurred—i.e., No. 64—and in which there was chronic suppuration (116), the bactericidal power was very high indeed. In these cases the persistent mechanism of defence against the organisms can explain this phenomenon, for if the bactericidal power was low in these cases severe illness would result. In 41 cases in which the bactericidal power of the blood was investigated with test doses of light, 33 cases (80·5 per cent.) showed a definite increase from 2–35 per cent. Seven cases showed no change with radiation, and of these five cases had an initial bactericidal power of 98–99·5 per cent. The two remaining cases (Nos. 95 and 125) are of interest as neither showed any erythema after radiation, and when tested again seven days later with a dose of light-producing erythema they showed a marked increase in bactericidal power. One case of the whole series showed a lowering in bactericidal power. The dose of light employed in these preliminary tests corresponds to the minimal erythema dose as gauged by the test dosage armlet. There, therefore, appears to be a strong correlation between the bactericidal results and the erythema produced.

In carrying out these experiments on the effect of radiation on the bactericidal power of the blood, it was shown that heat rays and mustard poultices increased the hæmobactericidal power of rabbits. The heat had always to be sufficiently severe to produce a marked erythema and damaging of the skin before this phenomenon occurred. Prolonged use of a mustard poultice for one to one and a half hours over a large area of skin (the whole of the abdominal surface of rabbits) was necessary. Dr. Leonard

[11] Brit. Jour. Expt. Path., 1924, v., 54.

[12] THE LANCET, 1923, i., 417, 473.

Colebrook has failed to indicate an increased bactericidal power of the blood after the application of mustard plasters to the human skin. Table V. illustrates a series of results observed during the treatment of 60 patients.

TABLE V.

Case.	Diagnosis.	Dose of light.	I.K. units.	Av. % hæmo-bactericidal power (1) before, and (2) after radiation.	
				(1)	(2)
1	Lumbago.	Back exposed to arc 20 min.	6	97·5	100·0 + 2·5
3	Tonsillitis.	C.b. ex. M.V.L. 5 min.	6	98·0	100·0 + 2·0
4	Lupus vulgaris.	C.b. ex. arc 10 min.	6	97·0	93·0 − 4·0
6	Anæmia.	C.b. ex. M.V.L. 6 min.	6	89·0	96·0 + 7·0
11	Colitis.	C.b. ex. to double M.V.L. 5 min.	6	70·0	81·0 + 11·0
14	Locomotor ataxia.	C.b. ex. to double M.V.L. 4 min.	5	88·0	96·0 + 8·0
15	Anæmia.	C.b. ex. M.V.L. 5 min.	6	86·0	92·0 + 6·0
16	Furunculosis.	C.b. ex. to double M.V.L. 5 min.	6	82·0	91·0 + 9·0
17	Asthma.	C.b. ex. to arc 10 min.	6	86·0	92·0 + 6·0
19	Tuberculous adenitis.	C.b. ex. to arc 5 min.	6	90·0	96·0 + 6·0
26	Lupus vulgaris.	C.b. ex. to arc 10 min.	6	97·7	99·2 + 2·0
29	Rheumatoid arthritis.	C.b. ex. M.V.L. 7 min.	8	96·5	98·0 + 1·5
40	Tuberculous adenitis.	C.b. ex. to arc 5 min.	4	99·0	99·0 −
42	Tuberculous peritonitis.	C.b. ex. to double M.V.L. 5 min.	6	95·0	97·0 + 2·0
45	Asthma.	C.b. ex. M.V.L. 7 min.	8	87·0	99·0 + 12·0
46	Bronchitis and ichthyosis.	"	8	97·8	99·2 + 2·0
55	Colitis.	C.b. ex. M.V.L. 3½ min.	4	97·0	98·8 + 1·8
58	Pharyngitis.	C.b. ex. M.V.L. 5 min.	6	82·0	92·0 + 10·0
60	Dermatitis herpetiformis.	C.b. ex. M.V.L. 4 min.	5	87·0	95·0 + 8·0
64	Subacute arthritis.	C.b. ex. M.V.L. 5 min.	6	99·0	99·0 −
67	Lupus erythematosus	Back ex. 3½ min.	2	94·0	96·0 + 2·0
68	Psoriasis.	C.b. ex. 5 min.	6	84·0	98·5 + 14·5
71	Phthisis.	C.b. ex. M.V.L. 4 min.	5	58·0	93·0 + 35·0
75	Anæmia.	C.b. ex. M.V.L. 3½ min.	4	98·0	98·0 −
77	Lupus erythematosus	"	4	62·3	74·8 + 12·5
78	Emphysema and asthma.	C.b. ex. M.V.L. 4 min.	5	91·0	94·0 + 3·0
82	Tuberculous knee-joint.	"	5	75·0	90·0 + 15·0
83	Rheumatoid arthritis.	C.b. ex. M.V.L. 5 min.	6	90·3	92·7 + 1·6
88	Lupus erythematosus	C.b. ex. M.V.L. 3½ min.	4	88·0	93·0 + 5·0
92	Phthisis.	C.b. ex. M.V.L. 4 min.	5	92·0	99·5 + 7·5
93	Colitis.	C.b. ex. M.V.L. 5 min.	6	98·0	98·0 −
95	Sinusitis.	C.b. ex. M.V.L. 3½ min.	4	88·0	88·0 −
97	Asthma and eczema.	"	4	99·0	99·5 + 0·52
102	Debility.	C.b. ex. M.V.L. 5 min.	6	99·5	99·5 −
106	Parenchymatous goitre.	C.b. ex. to double M.V.L. 4 min.	5	82·6	83·2 + 0·6
114	Tuberculous adenitis.	C.b. ex. M.V.L. 4 min.	5	83·0	100·0 + 17·0
115	Scleroderma and colitis.	"	5	85·0	100·0 + 15·0
116	Osteomyelitis of rib.	C.b. ex. M.V.L. 5 min.	6	99·5	100·0 + 0·5
120	Tuberculous ankle.	"	6	90·0	97·0 + 7·0
124	Sinusitis.	"	6	89·0	98·0 + 9·0
125	Pharyngitis.	C.b. ex. M.V.L. 4 min.	5	86·0	86·0 −

C.b. ex. = Chest and back exposed.

Remarks.—Case 4: Patch of lupus exposed. Case 6: Yellow skin erythema. Cases 14 and 16: Marked erythema. Case 19: Yellow skin (Japanese) erythema. Case 67: Fair skin, light sensitive erythema. Case 75: No skin reaction. Case 95: No erythema after light dose. Case 106: Very slight skin reaction; sallow complexion. Case 125: No reaction of skin after radiation.

Individual and Regional Sensibility to Light.

There is a very marked difference in the degree of erythema of the skin produced by the same dose of light. Fair-haired people are, as a rule, more sensitive than dark people; but this usually applies to large doses of light and is not very apparent with smaller doses. In carrying out the test dosage of the abdominal skin, a high red index, 1·3 and 1·4, and low yellow index, 1·0, usually signifies sensitiveness to light. The skin bearing a high yellow index of 1·2–1·4 is rarely sensitive to light. The soft thin white skin, which sweats readily and easily bruises, is very often sensitive to radiation. Another easy method of detecting light sensitiveness is by means of transillumination of the air sinuses or of the skin. A very brilliant "red reflex" on ophthalmoscopic examination often signifies sensitiveness to light.

The degree of erythema produced by light varies considerably and this can be roughly classified in the following way: (1) Erythema which is just visible and usually disappears without any apparent sequelæ in one to two days. (2) Erythema which is readily perceptible, followed three to four days later by fine desquamation and results in faint pigmentation. (3) Erythema which shows a violent bluish flush, tender and hot on palpation, with slight œdema and raised hair follicles. This is followed by massive desquamation and results in a deep persistent pigmentation. (4) Erythema causing much pain and resulting in blistering and its sequelæ.

The different areas of the body vary extensively in their sensitiveness to radiation. The inner side of the arm and thighs are the most sensitive. The popliteal space, the side of the chest and back are the other sensitive sites of the body. The skin remaining after desquamation is extremely sensitive to light, and often a small dose of light (2–3 I.K. units) will produce a severe erythema and hæmorrhagic vesicles. The skin should therefore be rested for a while after the period of desquamation. Areas of vitiligo are more sensitive than normal skin; scleroderma is very resistant to radiation and only reacts with very slight erythema.

Dr. L. Colebrook [13] has shown that excessive dosage with light will produce a very marked decrease in the bactericidal power of the blood. The extent the luminous and heat rays take in producing this damage is not yet definitely decided. But in many animal experiments in which rabbits were inoculated so as to produce conditions of septicæmia, excessive dosage with light appeared to hasten death. In all cases of acute infections and in very sick patients, the dosage with light can be carefully controlled by means of the bactericidal test. Prolonged exposure to arc lamps increases the risk of overheating the body by means of the luminous rays. Many light-sensitive patients experience headache, sickness, and dizziness on exposure to light. This is followed by general malaise with or even without the presence of marked skin erythema. It is very difficult to determine whether this sensitiveness is mainly due to the ultra-violet or luminous heat rays. They usually appear to tolerate the mercury-vapour lamp better than the arc lamp.

Light Adaptation and Pigmentation.

Pigmentation and adaptation to light follows after repeated radiation. The nature of the colour of the pigment deposited varies with the source of light. Patients exposed to sunlight and the Finsen arc usually show a deep black-brown pigment. The long flame arc and tungsten carbons give rise to a reddish-brown pigment. The mercury-vapour lamp produces a yellowish-brown pigmentation. Karl Dorno [14] showed after many years' investigation at Davos, that in winter there is considerable heat intensity with minimum ultra-violet energy. In spring there is the greatest heat energy with less increased ultra-violet energy. In the summer there is great heat energy and the maximum ultra-violet energy occurring simultaneously. In the autumn there is great heat energy and a comparatively strongly maintained ultra-violet energy. He therefore concludes that the heat intensity fluctuates very little in the high mountains, but the ultra-violet intensity shows great variation according to the time of day and the time of year. The heat and ultra-violet energy—measured on an arbitrary scale and not in

[13] THE LANCET, July, 1923.
[14] Study of Light and Air of the High Mountains, 1911.

actual energy—are equal to one another on July 15th: the heat at noon on Jan. 15th is ten times as great as the ultra-violet radiation. The autumn sun is double as rich in ultra-violet radiation as the spring sun.

CHART 2.

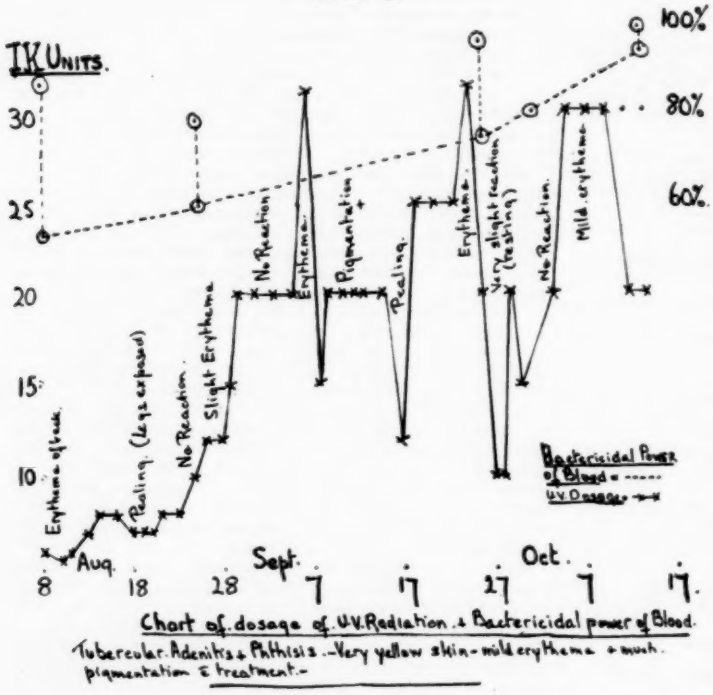


Chart of dosage of U.V. Radiation & Bactericidal power of Blood.

Tubercular Adenitis & Phthisis.—Very yellow skin—mild erythema + much pigmentation & treatment.—

O. Bernhard [15] has shown that marked erythema of the skin occurs in the winter in the glacier regions, and that the most marked pigmentation is seen in the spring. He therefore maintained that pigmentation is prevalent at the time of greatest heat intensity and less increased ultra-violet energy. The chief function of the pigment melanin is to form a protective screen in the skin against excessive penetration of the luminous rays. There is no evidence to support the views of Rollier and Christen—that melanin is an optical sensitiser, similar to eosin and erythrosin.

Pigmentation is an effective screen to the action of the ultra-violet rays and prevents their biological action. Rost [16] has shown that skin areas repeatedly exposed to the Kromayer lamp become insensitive to light independent of the degree of pigmentation. There is no method available at present to determine the degree of pigmentation in any definite units, and therefore it is difficult to draw conclusions on the relation of pigmentation and light protection. Dr. P. Keller has demonstrated the following interesting points: (1) The development of ultra-violet pigmentation is independent of that of tolerance; (2) pigmentation alone does not imply light tolerance; (3) ultra-violet tolerance is possible without pigmentation.

[15] Strahlentherapie, 1919, ix., 520.
[16] Deutsche med. Woch, 1918, xxvii.

Drs. L. Hill and Argyll Campbell have shown that a suspension of melanin will completely screen the frog's mesentery against the action of the ultra-violet rays and that melanin is not a sensitiser. The fact that pigmentation can be produced apart from light and also by means of heat rays suggests that pigmentation is not specific to the biological action of light. It appears to be closely allied to the heat and luminous rays, since it is more apparent with radiation of the warm sun and the prolonged exposure to arc lamps (one to two hours). The short ultra-violet rays appear to have the power of changing the distribution of the pigment so as to alter the colour of the skin. As the degree of pigmentation increases the sensitiveness to ultra-violet radiation usually diminishes, and light dosage must be increased. As a general working rule an erythema of the skin produced by light gives rise to an increased bactericidal function. It is therefore more advisable to utilise a scheme of dosage which results in the slow production of pigmentation, but definite erythema. This can usually be achieved by utilising a very great intensity of ultra-violet energy, and to avoid overheating of the body by using a short and intense dosage.

The dose of light over the irradiated area is controlled by the degree of erythema produced. During the stages of desquamation the skin is rested, so as to avoid excessive dosage which rapidly results in accustoming to light. A dose of light consisting of 12 I.K. units would correspond to 60 minutes' exposure to the Finsen arc. Seven minutes' exposure to the double M.V.L. (480 volts + 3·5 amps.) + double long flame arc gives a similar ultra-violet energy.

M.V.L. M.V.L. Arc. Arc.
(4 + 4 + 2 + 2 = 12)

CHART 3.

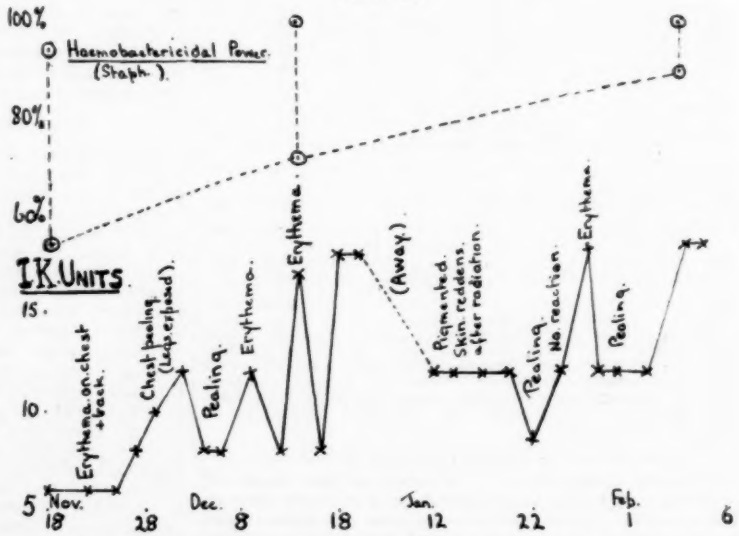


Chart of dosage of U.V. radiation & Bactericidal power of Blood.

Chronic Fibroid Phthisis—Fair Skin—Sensitive to Light—Pigmented very slightly—

The amount of heating of the body is, by use of these means, much reduced. In all the cases under observation the degree of pigmentation is slight, and the dosage of light is controlled by the erythema response following radiation. Although it is impossible to decide the issue conclusively, in many cases pigmentation appears to be indicative of therapeutic action of the ultra-violet rays. The reaction of the skin to light, in the production of erythema which in a mild degree appears to be beneficial and in the production of pigment, can be controlled by carefully graded and regulated dosage.

Charts 2 and 3 indicate the dosage of light adopted in a series of cases under investigation. The dose of light is expressed in terms of infusoria-killing units, in the method previously described. In all these cases the light sensitiveness of the skin was first tested and a bactericidal test was carried out, with an estimated erythema dose of light. The chest and back were first exposed to the double mercury-vapour lamps and at each alternate sitting the front or back of the legs were exposed. When the skin became insensitive to 6 I.K. units with the M.V.L., exposure to the double arc was started. This was found to be of great value in the fair-skinned patients, as a very mild superficial pigmentation was present. In all cases exposure to light was stopped during the stages of desquamation, and a sufficient interval of rest was given to allow the newly-formed skin to "harden." The dosage of light was controlled by the reaction of the skin. The aim of dosage was to produce a mild erythema of the skin with each dose applied. In all these cases pigmentation was slight, and the sensitiveness of the skin was maintained during the whole course of treatment. At periodic intervals during the course of treatment, further bactericidal tests were carried out. The general conclusions from the tests showed that in cases where the hæmo-bactericidal power was low, a steady improvement could be established. The erythema dose produced increased bactericidal power in the blood.

SUCCESSFUL RESEARCHES IN THE TREATMENT OF INFANTILE PARALYSIS.

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EXPERIMENTAL treatment of infantile paralysis, carried out recently at the Heritage Craft Schools at Chailey, having been attended with marked success, it seems advisable to publish the results in order that it may be established at other institutions dealing with this affliction of childhood. Improvements will undoubtedly be made in the near future on the methods about to be described; in fact, they are already in mind, but for the reason stated above the writer has been induced to place the work upon record at its present stage.

The cases selected for treatment were, as will be seen below, children some of whose muscles gave no response to the interrupted galvanic current. Moreover, the acute attack resulting in the degeneration of the nerve-fibres had taken place so many years before that, acting on experience gained from the practice of massage and electrical treatment alone, one would have said that further measures with a view to restoring the function of the paralysed part would hardly be justified. At the same time palpation gave the impression that the muscles had not completely atrophied.

These cases having been selected, the treatment was begun on the dates given and has been carried on to the present time. The following measures were adopted:—

1. General radiation of the skin by artificial sunlight. (Occasionally the real sunlight was used, but during the past year this has been so seldom available that nine-tenths of the treatment has been given by artificial means.)
2. Local treatment of the affected muscles by rays from long ray lamps passed through red filters.
3. Electrical treatment.
4. Re-education of voluntary stimulus.
5. Instrumental support for the paralysed muscles and then (most important) abandonment of support, in some cases at an early stage. The writer would call particular attention to this matter which is referred to in detail below.
6. Massage.

The deductions which led to the adoption of the above methods of treatment are simply explained as follows:—

General Application of Artificial Sunlight.

Several years ago the writer began to treat rickets in children by means of artificial sunlight. Observation showed that children suffering from active rickets were frequently also suffering from acute neurasthenia. The active symptoms of rickets cleared up very quickly under the administration of the light, but the neurasthenic symptoms were the first to disappear. The deduction drawn from these observations was that neurasthenia and rickets are sometimes causal relatives. Rickets is caused by light starvation, so is neurasthenia. The writer believes that neurasthenia in the adult is a symptom frequently due to the lack of antirachitic substance at a time of life when the complete formation of the bone renders the bony symptoms impossible.

Following these observations he has successfully treated many cases of neurasthenia in adults by artificial light. Thus the disturbance of nutrition in the nerve-centres due to lack of antirachitic substance may be the cause of neurasthenia, and the cure found in the general treatment of the body by light. This would mean that the matter formed by the action of sunlight on the skin is a factor in the nutrition of the nerve-centres as well as of the bones.

With these observations clearly in mind, the writer turned his attention to the treatment of infantile paralysis. This acute infection produces a severe shock upon the whole nervous system. The hæmorrhagic myelitis leads to the total destruction of a smaller or larger number of motor nerve-cells, while at the same time many suffer a temporary suspension of their activities by disturbance of their nutrition in a varying degree, owing to compression. Thus some may recover function in a few days or weeks, others may lie sick and dormant for a longer period, and may lose their axons, which subsequently regenerate following revitalisation of the cell centre. After these attacks we also notice symptoms in the patient that are probably produced by neurasthenia.

Now the muscular atrophy following an acute attack of anterior poliomyelitis is intense, and in those cases where extensive degeneration of the axons has taken place, and has been followed by regeneration, the young axons, when at last they enter their muscular destination, find fibres in such an extreme state of atrophy that no response to the motor stimulus is obtained from them. The atrophied muscle-fibres are shrivelled up, the skeletal elements have lost their elasticity, and the contractile substance appears to have been largely absorbed, so that the nuclei have come together in heaps.

Under the action of light, changes take place in the skin resulting in the formation of the substance mentioned above which is carried away by the lymph and distributed throughout the body by the blood. This we may call the antirachitic substance. It has an intensely active rôle in the promotion of nutrition. Its absence produces the rachitic condition in the bones of growing children and neurasthenia due to the exhaustion of the nerve-centres, while its production by the action of light on the skin results in the re-composition of the rickety bones and the re-nutrition of the nerve-centres.

General Radiation.

So the writer started to treat his paralysed patients by the general application of natural and artificial sunlight to their skins, thinking that of all illnesses there is none so urgently demanding this treatment as acute anterior poliomyelitis. This treatment was given strictly in accordance with the principles laid down by Rollier for treatment by real sunlight, the chief of these being the avoidance of excessive or widespread erythema and a dosage regulated to the tolerance of each individual patient. This artificial light has been produced by the combination of the mercury-vapour lamp and a battery of the long-ray lamp bearing the writer's name, with the red screens in operation.

Having carried out treatment on a very large number of patients suffering from a variety of complaints, with different open arc lamps, the writer now feels confident of the complete superiority of this combination of mercury-vapour and incandescent filament lamps over the open arc lamps. The dosage of the patient with ultra-violet rays can be regulated with much greater accuracy with the mercury-vapour lamp than with any of the open arcs, while the treatment of the patients in the recumbent position is much simpler and better.

It will be seen that the efficient reflexion of the rays from the parabola of the writer's lamp is a most important factor when the shallow penetration of the ultra-violet rays is borne in mind, as the parallel rays from the parabolic reflector striking the skin (as nearly as can be arranged) at right angles penetrate more deeply than the majority of the rays coming directly from the source of the light because most of these rays penetrate the skin in an oblique direction and are consequently arrested nearer the surface.

The reflected rays being therefore of greater importance than the direct rays the advantage of the removable reflector fitted to this mercury-vapour lamp is manifest, as only the daily removal of the reflector for polishing can ensure efficiency of reflection. A nickel surface may be used, and in polishing this, extreme care must be taken that it is not scratched, because scratches particularly impair the reflection of the ultra-violet rays.

In regulating the dosage of ultra-violet light it is well to avoid over-pigmentation of the skin, as a dense pigmentation checks the penetration of the red rays. The writer aims at a moderate pigmentation. Here again most of the open arc lamps are at fault as they produce excessive pigmentation in some patients. This pigmentation is a needed protection when only real sunlight is used, because the proportion of heat and visible rays in sunlight is such that people exposed to them for long periods need something to moderate these waves. When artificial light is used this should not be necessary, and if penetration by red rays is required it is an impediment.

Rollier, supported by Gauvain, has pointed out to us that patients who pigment deeply under sunlight treatment respond better to the treatment than those who do not pigment. The writer is inclined to believe that this observation need not be interpreted as meaning that the pigment itself is the curative factor. It has been shown that the phenomenon of pigmentation is connected with certain endocrines—e.g., pituitrin. It is therefore possible that the "non-pigmenter" does not react to treatment simply because his endocrine production is abnormal, and not because he lacks pigment.

Local Treatment by Red Rays.

The long-ray lamps already alluded to consist primarily of a carbon filament in vacuo, the bulb of which is made of glass. These lamps are specially constructed for the writer by makers of electric filament lamps, as it was found that they were unobtainable. They yield a light much richer in red and infra-red frequencies than the metal filaments in gas-filled globes made for lighting purposes, and the writer was anxious to obtain red rays for the local treatment of the muscles.

The red rays penetrate the tissues much more deeply than the heat rays, because the latter are absorbed by water. The depth of their penetration is demonstrated by the simple experiment of holding the hand in the path of a sunbeam entering a room through a window. The red light will be seen plainly to penetrate the fingers. In order to give a strong dose of red light screens of red glass are fitted to the lamps. These screens cut off enough of the heat rays to enable a much stronger dose of red light to be given to the patient than would be possible without the screens. The red rays themselves produce heat but to a lesser degree than the infra-red.

The writer has found these red rays of the greatest value in the treatment of atrophied tissue and, judging by the results obtained in treating tissues exhibiting chronic inflammation, he has concluded that they produce in these tissues an increased power of resistance and repair, and it is perhaps not unlikely this effect is obtained through the local stimulation of the sympathetic nerve-fibres. There is certainly no comparison between this therapeutic effect of rays from the filament lamps that have been passed through the red screens and the same rays unfiltered, when in each case the dosage of light has been the maximum compatible with comfort and safety for the skin.

In the treatment of rheumatoid arthritis by artificial light the redevelopment of the wasted muscles became very marked when the writer began to use intense red rays. The above observations led to the adoption of this red ray treatment for muscles affected by acute anterior poliomyelitis, and the results given below surely prove its value. From 20 minutes to half an hour daily exposure was given locally to each affected group of muscles, the rays from the mercury arc being given to the body generally as a separate treatment. The writer believes that the time allowed for the local treatment of the paralysed muscles by the red rays might well be increased beyond the limits stated above.

Electrical Treatment.

The rationale of electrical treatment in infantile paralysis has been fully described by the writer in a paper read before the British Orthopædic Association in October, 1922, and subsequently published in the *Journal of Bone and Joint Surgery* of April, 1923, where it is pointed out that in considering the re-nutrition of muscles there is an important point that has always been overlooked and is essential to the restoration of contractility. It is explained by the theory of muscle contraction given by Schaffer.

When a muscle contracts, the clear contractile substance passes into the tubules of the sarcous element, which are elastic and are dilated by its entry. When the muscle is relaxed, this substance flows out of and remains outside the sarcous element, the little tubes narrowing as they elongate. As long as the muscle remains in a state of complete relaxation—for example, when elongated during paralysis—the little tubes remain in this posture. It appears to the writer that the atrophy following the paralysis besides causing absorption of the contractile substance is accompanied by a loss of elasticity in the sarcous element, so that the tubes can no longer dilate to their proper extent to admit the contractile substance for the contraction of the muscle in response to a stimulus. This loss of elasticity may be partial, leading to an impairment of contractility in the muscle, or if allowed to progress far enough, such rigidity is the result that dilatation is impossible and contractility is altogether lost. The above theory is absolutely in accordance with observed facts, and it will be seen that it is a separate condition apart from the mere loss of contractile substance.

In lesions of the lower neurone these changes take place more rapidly in young children than in older children and adults, so that in their case it is very needful to begin treatment early. But in any case

there is really only one way absolutely to safeguard these paralysed muscles from this dire catastrophe—that is, to ensure a periodical contraction during paralysis, and the only way to ensure this is to employ electrical stimulation. There are no other means. The greatest care must be taken, however, not to over-exercise the paretic muscle. This is a very important point. A dozen good contractions daily for each muscle are sufficient in the early stages.

The cause of failure of electrical treatment in infantile paralysis lies too commonly in ineffective methods of application, and this leads to erroneous opinions held on the subject by those who observe the results. Treatment directed to an increase of the circulation in the affected limb yields good results up to a certain point, and undoubtedly improvement of nutrition in the limb as a whole takes place when, for instance, it is periodically immersed in a faradic or sinusoidal bath, but as a measure for preserving or restoring contractility of paretic muscles it fails because muscles most affected, and therefore most in need of the treatment, either do not respond to faradic at all, or at the best but feebly, while the normal muscles contract strongly and may do actual harm by stretching their weaker neighbours. This latter evil can be avoided by splintage during the treatment, but this is a difficult matter when a bath is used and a precaution rarely carried out.

It has already been stated that wasting and loss of contractility proceed more rapidly in young children than in older patients. This renders effective treatment the more urgent in their case, especially as the limb will be increasing in length. It cannot be too strongly urged that paralytic muscles should be treated only by operators who have learned this particular work under proper supervision in a school dominated by orthopædic ideas.

Re-education.

Re-education was very carefully carried out. It is most important that the patients should not be exhausted and discouraged by exhortation to contract muscles that will not and cannot respond. Patience should therefore be exercised and re-education withheld until the proper time has arrived, and it should then only be gradually and intelligently carried out. For instance, the long extensors of the toes must not be used instead of tibialis anticus in dorsiflexing the foot.

Instrumental Support.

Instrumental support was considered from an entirely new standpoint, as the writer believes that although it is of paramount importance properly to relieve a paralysed muscle of all tension until voluntary response is restored, yet it is a form of treatment very much overdone. When voluntary response is regained support must be discarded at times altogether, these periods varying according to the state of the neuro-muscular combination at the time being.

There are two points the writer would like to make particularly clear as they are taken into constant consideration, and he regards them as essential. The first of them is that so long as a paretic and wasted muscle is inactivated by a supporting appliance it will rarely regain useful activity, and it will rarely regain sufficient tone owing to the effect of such fixation upon the factors concerned in its production.

The second point is that whereas the constant pressure of the enveloping band or strap of a surgical appliance will cause severe wasting in even a normal muscle, such a factor has a far more serious effect upon a paretic muscle, and should never be allowed. Thus, when the quadriceps muscles are affected in anterior poliomyelitis and a walking calliper is used, flexion of the knee-joint should be prevented by a band passing over the front of the knee only, the straps commonly used, which pass over the quadriceps muscles, being very harmful.

When voluntary response has been regained in the quadriceps the writer has, with certain exceptions, discarded the calliper altogether, believing this to be the best procedure, so long as the psoas and glutei were activating, and allowed the patient to get about with poles or crutches according to the necessities of the moment. In such cases it is easy in this way to let the patient get about without support for the quadriceps muscles if a little care is exercised. The anterior tibial muscles, however, present a more difficult problem, owing to the tendency of the foot to drop into the equinus position during the day (so that some supporting appliance is needed), and to be forced into this position at night by the weight of the bedclothes. Thus a night shoe (keeping the foot at right angles with the leg with slight inversion) should be worn to a late stage, and the masseuse should constantly correct any tendency to shortening of the calf muscles. Should this condition be present in a marked degree when treatment is first begun, much valuable time will undoubtedly be saved by a tenotomy of the tendo Achillis, as in the writer's experience it is impossible permanently to reduce an advanced contraction of the calf muscles by physical means alone.

Before leaving the subject of supports, let it here be said that enveloping plaster-of-Paris splints were never used as these encourage atrophy by depriving the part of all light and air.

Massage.

Massage was carried out as a part of the treatment. In cases where atrophy is advanced it is of use, yet the more the writer uses sun rays, real and artificial, in treatment, the less he is inclined to employ massage. He always has in mind the danger of pulling the inert muscles out of shape in this form of treatment done day after day. This remark more especially applies to deep effleurage which is, in his opinion, a grave mistake. Massage is chiefly needed in cold weather.

Clinical Records.

F. T., aged 13, had an acute attack of anterior poliomyelitis when aged 14 months. Treatment was begun in January, 1924. He had then no faradic or voluntary response in the right quadriceps muscles. On Jan. 28th, 1925, he had regained a good voluntary response in these muscles, varying a little from day to day, but at times he can hold the leg with the knee extended with his thigh in a horizontal position. He is still steadily improving.

J. C., aged 12, had an acute attack of poliomyelitis in early infancy. In February, 1924, the glutei and all muscles of the right lower limb excepting the adductors gave no faradic or voluntary response. Treatment was started on that date. On Jan. 28th, 1925, there was a plain voluntary response in the quadriceps, the response being, however, weak. The glutei gave a good voluntary response, and they are becoming quite strong so as to give really useful activity. The hamstrings have recovered sufficiently to flex the knee-joint through the right angle with the patient lying in the prone position. The peronei have a weak but distinct voluntary response; the tibialis anticus is beginning to give voluntary response; all these muscles are improving.

W. B., aged 11, had an acute attack of poliomyelitis in both lower limbs when 4 years old. In January, 1924, there was no response in the left quadriceps. On Jan. 28th, 1925, these muscles have a weak response almost but not quite strong enough to support the weight of the leg in the horizontal position. The left anterior tibial group were very weak, but are now recovering rapidly; it is to be expected that at the present rate of progress this boy will be able to discard his instrument altogether. In the right leg in February, 1924, tibialis anticus gave no faradic or voluntary response. On Jan. 28th, 1925, it now gives a really useful voluntary response, almost sufficient to dorsiflex the foot. In this case there had been considerable contraction of the calf muscles on both sides so that he had been earmarked for tenotomy. The muscles have, however, completely yielded to manipulation so that the foot can now be placed at a right angle. The remarkable feature of this case is the splendid nutrition of both legs, which have developed excellently in this respect.

T. W., aged 15, had infantile paralysis when less than a year old. On Feb. 26th, 1924, no faradic or voluntary response was obtained in the anterior tibial group or the quadriceps muscles on the right side. On Jan. 28th, 1925,

the quadriceps and all the muscles of the anterior tibial group were beginning to give a voluntary response. Atrophy in this case had been very severe, but he has lately much improved. On the left side tibialis anticus gave no faradic or voluntary response at first, but is now giving voluntary response.

Conclusions.

It is, of course, necessary that treatment of such cases as these should be continued over a long period in order to obtain a useful result, that is to say, to establish activation in the paralysed muscles so that they can assume their proper rôle without the support of any appliance.

When we consider that ten years is not thought too long a period for the mental tuition of these children during the greater part of every day, it is surely a very reasonable thing to demand treatment for three-quarters of an hour or so daily for three or four years, because this can very easily be done in establishments especially devoted to the welfare of cripples where they are resident and always available when required for treatment. The above cases have been selected for inclusion in this paper because they have shown a recovery of muscles that were completely paralysed at the beginning of the treatment and are therefore the strongest possible proof of the value of the methods adopted, but while their treatment has proceeded other patients have been treated in the same way, whose muscles were activating very weakly at the beginning of treatment and have shown quite exceptional recovery.

The writer has treated a very large number of cases of infantile paralysis at different hospitals for some years past by the methods mentioned above, excepting the general light treatment and the local treatment of the muscles by the red rays, and he has never obtained results that can be compared with these just described, nor has he seen such results elsewhere. The treatment by light therefore stands out very distinctly as a great advance. Among the cases hitherto regarded as hopeless there are unquestionably a large number in which destruction of innervation renders recovery impossible, and treatment is, of course, thrown away on these. At the same time, examination and a short course of treatment will show whether useful recovery of nerve-fibres has taken place.

Much skill, perseverance, and judgment are required on the part of the operators. The writer must therefore pay a tribute to his assistants, Miss F. Rolleston and Miss I. Seldon, who have been responsible for the carrying out of the above methods.

RHEUMATIC INFECTION IN CHILDHOOD.

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FIFTY cases, picked at random from a much larger series of Bath school-children selected during routine school inspection and clinic work, either because of heart disease, suspect heart disease, or symptoms suggesting rheumatic infection, have been examined, and 44 in whom the diagnosis was established to the clinical exclusion of other toxic states are reported upon fully. The detail embarked upon negatived the possibility of investigating a larger series. School medical records since 1920, compiled by one of us, were available, and each case in the present series was seen more than once in consultation. The inquiry into home conditions and house inspection was made by voluntary school-care visitors under the direction of the Care Secretary, Miss E. G. Greenall, and the reports were according to a very detailed schedule.

The subject is discussed from the viewpoint of the soil, including inheritance, family history, past history and physical make up of the child, and environment; and the infection, including subjective symptoms, duration of ill-health, and objective physical signs.

In Respect of the Soil.

Inheritance.—Of the 44 cases diagnosed as suffering from rheumatic infection 21 had an adjacent and 14 a remote family history. By adjacent is meant definite rheumatic fever or rheumatic chorea in either parent, brother, or sister. By remote is meant "rheumatism" in the above relations, or rheumatic fever in a grandparent, uncle, aunt, or first-cousin.

Family Colouring.—The colour of the hair in the above adjacent relations was nondescript in 19, definitely fair in 10, definitely dark in 9, definitely red in 6.

Colour of hair in the cases under review was nondescript in 23, definitely fair in 13, definitely dark in 2, definitely red in 6.

Past history of the same cases: Rheumatic fever in 6, chorea in 11, scarlet fever in 5.

Environment.—Altitude of house: Under 100 ft. in 27 (61·3 per cent.) instances, under 200 ft. in 40 (90·9 per cent.) instances. In only 6 instances was residence in the present house under 3 years—in the remaining 38 cases the residence had been unchanged for over 5 years.

Subsoil.—Alluvial, 13; gravel, 15; lias, 12; other types, 4. The gravel in the majority of these cases is in an area adjacent to the river-bed and used to be flooded.

House Reports.—Damp, 20; ventilation inadequate, 14; light poor, 12. The terms dampness, inadequate ventilation, and poor light are those which would be, and in point of fact were, applied to conditions striking an ordinary educated person and not a sanitary inspector. In only 6 instances could the term overcrowding be applied to relation between the number of inmates and available rooms. Six houses only had under 4 rooms, 16 houses had 4 rooms, 9 houses had 5, and 13 had 6 or more.

The weekly gross income per head is as follows: In no case was it less than 5*s.*; in 21 cases it was between 5*s.* and 7*s.*; in the remainder it was over 7*s.* In practically every instance the parents of the affected children were in steady work, in receipt of a steady income, and generally belonged to the skilled artisan section of society.

In Respect of the Infection.

A history of symptoms in the children was given as follows: Headache in 10, sore-throat in 12, stomach-ache in 26, stiff neck in 8, growing pains in 31, stitch in 26, swollen joints in 3.

The nervous symptoms in the children were: Irritability in 5, nervousness in 14, sleep disturbances in 20, those of chorea in 4.

The duration of symptoms in the children was: Less than 1 year, 10; 1 to 2 years, 11; 2 to 5 years, 17; more than 5 years, 4; unknown, 2.

Physical Signs.—Pallor and anæmia are not recorded in that blood counts were not undertaken. In 16 cases the condition of the tonsils was such as to cause chronic enlargement of the submaxillary tonsillar gland.

The cardiac condition in the children was: Morbus cordis in 14, suspect cardiac disease in 22, normal cardiac state in 8.

Subcutaneous nodules were present in 35 children, chorea was present in 6.

The following table explains the association of the principal physical signs:—

Rheumatic infection—				
Without physical signs				5
+ nodules				3
+ chorea				0
+ nodules	+ chorea			0
+ C.I.	(*a*)			0
,,	(*b*)			3
+ nodules	+ C.I.	(*a*)		16
,,	,,	(*b*)		11
+ chorea	+ C.I.	(*a*)		1
,,	,,	(*b*)		0
+ nodules	+ chorea	+ C.I.	(*a*)	5
,,	,,	,,	(*b*)	0

C.I. = Cardiac involvement. (*a*) = Suspect; (*b*) = Organic.

Examination of Controls for Subcutaneous Nodules.—At routine school medical inspection among the first 100 children examined 25 were found to have nodules, 20 of whom gave a definite history of symptoms suggesting rheumatic infection, 2 an indefinite history, and 3 no history. These children were of the entrant and intermediate groups and accompanied by their parents.

Commentary.

Several salient points emerge touching environment and infection.

In Respect of Environment:—

(*a*) Altitude and subsoil: The figures are remarkable and require no comment. It is to be noted that the altitudes in Bath vary between under 100 feet to over 500 feet.

(*b*) Social position of the parents: Is not one of extreme poverty and slum dwelling, but that pertaining to a more or less skilled worker in constant employment. This directly opposes the suggestion that rheumatic infection is a poverty disease.

(*c*) The family inheritance and predisposition is confirmed.

In Respect of Infection:—

(*a*) Nervous symptoms: The frequency in which the parents' sole complaint was that the child was nervous and irritable, or was a sleep-talker and sleep-walker, or that there was a combination of these symptoms is remarkable. Seeing that efficient anti-rheumatic treatment cured these conditions it would appear that they are manifestations of the rheumatic virus.

(*b*) Subcutaneous nodules: As a physical sign the subcutaneous fibrous nodule is a small and apparently insignificant variation from the normal, in consequence of which practice is necessary for the clinician to be certain of its presence. The final proof that such nodules exist rests on their removal and microscopical section.

To quote from Prof. I. Walker Hall's report [1]:—

"The nodule is composed of fibrillar tissue, aggregations of histiocytes and inflamed blood-vessels. . . . It is obvious that the ætiology of the nodule may be associated with a persistent irritant of the sub-infective or mildly infective type."

This particular reaction to infection, proliferation of the lining endothelial cells of arterioles and perivascular collections of histiocytes, is such as obtains in response to the virus of rheumatic fever, both in the endocardium and pericardium. It would appear therefore not improbable that these nodules are but pocket editions of the large subcutaneous nodes occurring in acute rheumatic fever and are analogous to the submiliary nodules of Aschoff.

(*c*) Treatment: It has been found that satisfactory results are more easily obtained by the exhibition of small doses of thyroid or iodine in addition to salicylates, alkalis, and arsenic. This treatment was adopted on the presumption that smouldering infections tax the thyroid gland. Rest, exclusion from school, and avoidance of wet were enforced where necessary.

Summary.

Forty-four cases of rheumatic infection in children have been investigated. The opinions reached are:

1. Rheumatic infection in elementary school-children is not a poverty disease.

2. It is extremely prevalent among such children.

3. The potency of heredity and low-lying locality is emphasised.

4. Subcutaneous nodules have been demonstrated in 35 out of 44 cases (79·5 per cent.), and are significant of an active rheumatic focus, as shown by their association with symptoms and their absence in three cases of stationary mechanical carditis formerly rheumatic. Thus their presence not only crystallises an otherwise nebulous diagnosis, but indicates the necessity of continuation of treatment, particularly in nervous children and in those with unsatisfactory cardiac sounds.

We wish to thank Miss Greenall and the voluntary care visitors under her supervision for their most valuable reports and scrupulous attention to detail, without which this investigation could not have been made.

[1] Brit. Med. Jour., 1925, i., 550.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF MEDICINE.

WEDNESDAY, JULY 22ND.

Lord Dawson, President of the Section, in his inaugural address referred to the especial importance of the 1925 meeting of the Association. There were, he said, three things that made it notable—the meeting coincided with the important outcome of recent research into malignant disease; it was held at a time when the duties of the Association were rapidly widening, especially as they affected facilities for learning and teaching and promoted generally the health of the public; and it was held at Bath, which for so long a time had been a leading health centre of the country. Referring further to cancer research, he pointed out that the specificity of the factor of the soil, as opposed to the non-specificity of the virus, illustrated once again the principle that the reaction of man to morbid processes bears upon it the stamp of his own individuality. Modern medicine was opening out the questions of trend and tendency, and as a result medical men of the future must increasingly be the prophets and not the vassals of statesmen. The President then referred with great respect to the late Sir Clifford Allbutt, both as a great thinker and a great leader, and especially as a leader to the B.M.A. during the years of the war. He reviewed his great knowledge, broad outlook, and fine scholarship, and, most important of all, his sane optimism, which had made him pre-eminently an object of the allegiance which age might command in the young.

Sir Humphry Rolleston, after reference to the remarks of the President upon cancer research, and having paid further tribute to the memory of Sir Clifford Allbutt, opened the discussion on

Rheumatoid Arthritis.

He submitted that it was generally felt that the disease, if not entirely due to some form of infection, was, at any rate, chiefly due to it. Was, however, infection the sole cause? Might, for instance, disordered metabolism initiate the changes that occurred in the joints? Such an authority as Sir A. Garrod had expressed the belief that the infective factor had been over-emphasised, and it was necessary to ask whether we were justified in ascribing the arthritis in all cases to infection. Reviewing other possible causative factors, he did not believe that heredity disposition was of much importance. Errors in carbohydrate metabolism had been thought to have a place in the causation of the disease, and it had been reported that 20 per cent. of cases showed a lowered basal metabolism and a diminished sugar-tolerance; these findings, however, probably represented effects rather than causes of the disease, and it had been found that after removal of a septic focus the sugar-tolerance returned to normal; moreover, diabetes mellitus was not commonly associated with rheumatoid arthritis. Similarly chronic infection was more probably the cause of thyroid insufficiency and other endocrine disturbances than vice versa, and on the whole there was not much evidence that such metabolic disturbances stood in causal relationship to the disease.

Speaking of the source of infection, Sir Humphry Rolleston said that in one series the teeth and gums had been found in 90 per cent. of cases to be the main source; in another series the tonsils were infected in 75 per cent. Accessory nasal sinusitis, he thought, might be secondary to dental infection. Two varieties of dental infection had to be distinguished. First, pyorrhœa alveolaris, where the infection was open and probably had not much causal effect in arthritis apart from achlorhydria; secondly, dental apical abscesses, from which absorption into the blood-stream was direct. In the former mode of infection it was possible that perversion of the functions of the liver, which stood between the alimentary canal and the

systemic circulation, might be a contributory cause of the disease; in such cases also the small rather than the large intestine appeared to act as a source of infection. In the genito-urinary tract the *B. coli* might act as an infective agent in a few cases, especially when harboured in the prostate. The respiratory tract, apart from cases of pulmonary arthropathy, could for practical purposes be exonerated. Although the opinion held in France that some cases of rheumatoid arthritis might be due to the toxins of the tubercle bacillus found little or no support in England, yet it was worth bearing in mind a possible analogy between syphilis and parasyphilitic disease on the one hand and tuberculosis and rheumatoid arthritis on the other. He referred also to the occasional association of arthritis with psoriasis and impetigo, and suggested that an anaphylactic relationship might exist between them. The chief objections to the infective theory were that people often have infective foci but no arthritis, and that in many cases we can find no infective focus. The uncertain factor of the soil, however, was to be borne in mind in weighing such objections, and search for a possible focus—e.g., in the prostate or nasal sinuses—was often incomplete. Again, certain foci of infection might be "closed"—the gall-bladder, for example—or one joint might act as a reservoir of infection for other joints. From the bacteriological standpoint it was usually a streptococcus that was incriminated, but there was often difficulty in recovering the organism from the synovial fluid and membranes.

As to treatment, prevention was the keynote. Eradication of infection, as, for instance, in dental extraction, must be complete. Just as a match was as effective as a torch in firing a train of gunpowder, so a small focus of infection might set up an arthritis as severe as a large one. Dead teeth were a favourite seat for infecting organisms, and there was consequently a danger in killing the nerves of teeth. As to encouraging the soil, he referred to the possibility of stimulating metabolism by thyroid extract, parathyroid, arsenic, iodine, and heliotherapy, and he drew attention to the theoretical uses of protein shock in therapy.

Mr. W. R. Ackland considered the division of dental sepsis into pyorrhœa and dental abscesses too hard and fast. Apical abscesses sometimes discharged through the gum, while in pyorrhœa, on the other hand the deeper layers could never be properly drained. Gastric juice did not always destroy the streptococcus and it might even liberate an endotoxin. Moreover, there was no gastric juice in the stomach at night, when toxins might pour down into the stomach and ultimately produce achlorhydria, and if the liver functions were affected the infection would pass to the general circulation. The streptococcus appeared to have an especial affinity for a dead tooth. The results of treatment were, on the whole, disappointing. One might at least hope, however, that patients would not get worse thereafter. X rays of the teeth not being infallible, he was in the habit of condemning all bridges, crowns, and dead teeth.

Dr. Rupert Waterhouse, from a hydrotherapeutic standpoint, said that though the infective hypothesis of rheumatoid arthritis was in full swing in Bath 25 years ago, there yet seemed as a result to be no diminution in the number of patients seeking relief there. Since the war especially, and in contrast to gout, the disease had increased. Not more than 10 per cent. of the cases recovered; but it was something from a patient's point of view to obtain even a slight functional improvement. The ideal was to get the patient to take intermittent courses of treatment, lasting not longer than six to eight weeks; longer courses were undesirable as promoting debility.

Prof. Osgood (Harvard University) feared that it must be confessed that in most cases removal of infected foci did not lead to recovery; in one series, indeed, there had been more recoveries where the foci had *not* been removed. There might, he suggested, be a missing link between a disordered metabolism and an infection. As a result of the presence of toxins often specific in man (and, indeed, often possessing a strict tissue-specificity), the permeability of the perisynovial capillaries might be modified, and a lowering of the basal metabolism induced—a matter of sensitisation.

Sir Robert Jones emphasised the disease as being a conjoint problem for the physician and surgeon. When the surgeon was called in it was usually too late for him to prevent crippling deformities. The natural course of the disease was towards deformity, which it lay in the power of any general practitioner to prevent. The first physical sign of deformity was a spasm of muscles to obtain the position of ease. As a rule the flexors pulled more and more effectively than the extensors, and so deformity of the muscles resulted. Of two types, one proliferative and the other osteophytic, the former was the more difficult to treat owing to the greater pain. He then referred to special joints; in the wrist, for instance, palmar flexion and ulnar deviation might be countered by an appropriate dorsi-flexion splint; flexion of the knees and adduction of the hips could be prevented by posture, sand-bags, and gentle weight extension. Any movements given were only to be within the limits of pain, and the greatest care was to be taken not to permit rash movements, such as, for instance, forcible extension of a knee where posterior displacement of the tibia was present in addition to flexion. Open operation was often of great avail, even in advanced cases; masses could be removed from the joints or arthrodesis performed with very satisfactory results.

Prof. Cawadias (Athens), after referring to the great variability of the factor of resistance of the body to infection, suggested that disordered metabolism of sulphur might contribute to this aspect of the disease. In support of this hypothesis he advanced the following observations: (1) Cases of rheumatoid arthritis lost too much sulphur in the urine. (2) This imperfectly oxidised sulphur pointed to a general defect in oxidation. (3) The fact that there was no increase in the output of ethereal sulphates showed that the increased sulphur did not originate from mere destruction of cartilage.

Dr. J. M. H. Monro reviewed several series of cases, showing that changes in the blood—anæmia, leucopenia, leucocytosis, and complement-fixation—might be found, in contrast to normal blood, in about 80 per cent. of cases of rheumatoid arthritis. The *Streptococcus viridans* appeared to be the usual source of infection, and had been found in the roots of teeth in which the X ray findings had been negative. While cocci were the usual cause of infection, it was not uncommon to find coincident tuberculosis and even syphilis.

Mr. Timbrell Fisher, speaking from a pathological standpoint, proposed to substitute for the older nomenclature of rheumatoid and osteo-arthritis a division of cases into three groups of chronic arthritis: (1) Chondro-osteal type, in which there was a primary degeneration of the more central cartilage, with eburnation of the underlying bone, while the lateral part of the cartilage became hypertrophied. It was only later that the synovial membranes also became hypertrophied, and there was never any small round cell infiltration. These cases, occurring usually in later life, constituted a degenerative group. (2) Mixed type, in which the cartilaginous and synovial changes occurred concurrently. A pannus spread from the synovial membrane into the cartilage, and small round cells were present. Lipping only occurred later. (3) Synovial type, which appeared more inflammatory, with abundant infiltration of small round cells.

Sir W. Willcox regarded infection as the primary cause in the great majority of cases, but was careful to exclude gout, neuropathic joint lesions, and such a condition as intermittent hydrarthrosis from the group under discussion. In support of the infective hypothesis he brought forward the following considerations: (1) Other known organisms—e.g., gonococcus,

pneumococcus, and *B. typhosus*—might produce arthritis very similar to rheumatoid arthritis; (2) rheumatoid arthritis frequently followed parturition; (3) an infective focus was almost always discoverable. Dental sepsis accounted for most cases (72 per cent.); the apical infections were not true abscesses causing pain from pressure, but rather necrotic areas. Tonsillar cases were fewer (10 per cent.) and occurred in younger patients especially. Diagnosis of antral infections was often difficult, even with radiography and transillumination, and in such cases it was best to puncture the antrum. The colon was often the seat of infection in elderly patients. Tuberculosis elsewhere was not, in his opinion, an important ætiological factor; on the other hand, he thought that the presence of septic foci predisposed to the development of phthisis. (4) The eradication of the infective focus had usually been followed by cessation of active inflammation. (5) Rheumatoid arthritis was only a manifestation in the joints of a chronic toxæmia. Treatment should aim at the removal of the infective cause, and might include Plombières colon irrigation as an important factor. Only after this removal were vaccines to be employed, and then only in small doses.

Sir J. Barr expressed his belief that acid fermentation in a dilated stomach was the main cause of the disease, and advocated a diet rich in red meat and poor in carbohydrate.

Lord Dawson said that it was an irresistible conclusion that infection played *a* part. The difficulty lay in the origin and measure of that infection, and hence a speculative removal of teeth and tonsils might be advised. Sometimes the source of infection might be inaccessible; at other times the infection might well be one which under ordinary conditions would have been non-pathogenic. In such cases treatment must be concerned with the raising of resistance. He looked to the bio-chemist to explain the expression "resistance," with the coöperation of the bedside physician. If the results of dental extraction were disappointing, and if it must be admitted that this was an operation of some violence, especially in the aged, yet there was a compensatory satisfaction in observing the increased care which the rising generation was giving to its teeth, even in hospital practice, as a result, he presumed, of its observations of its seniors.

Sir H. Rolleston replied. He referred to the sensitisation hypothesis of Prof. Osgood and to the observations of Prof. Cawadias on sulphur. He had always imagined that sulphur was given as an internal antiseptic. With regard to Lord Dawson's conclusion, he would put the question finally in another way: "Can you," he asked, "have rheumatoid arthritis without infection?"

THURSDAY, JULY 23RD.

Hyperpiesia.

Prof. T. R. Elliott having taken the chair, Lord Dawson opened a discussion on hyperpiesia. With a view to the necessity of confining his remarks to certain aspects of hyperpiesia, he postulated the assumption that this was a disease sui generis, involving certain disabilities, of which cardiac and vascular disease was the gravest. But it was better, he considered, in this inquiry not to examine those cases which showed most evidence of cardiovascular wear and tear, but rather to approach the subject through the avenue of youth, thus excluding those graver secondary complications; for it was in later life that hyperpiesia and arterio-sclerosis hunted in couples, and only by excluding the latter might they hope to determine whether hyperpiesia had its beginnings in structural change or in faulty function. The systolic blood pressure reached between the ages of 20 and 45 years the figure of from 115 to 130 mm. Hg; during this period it did not vary much, and he would from his observations view with uneasiness, at that period of life, a fixed systolic pressure of over 140. With exercise, of course, there was a rise, but in health a subsequent fall to normal took place within a few moments of resumption of rest. The studies of Alvarez had shown that of 1500 youths at the University of California 20 per cent. had pressures of over 140. No doubt there was a passing psychological cause for some of these, but it remained a fact that a certain proportion of the young had a true rise of systolic pressure. The diastolic pressure had been less widely studied, but he suggested that at this time of life it lay normally between 75 and 80 mm. Hg, and that at any age a figure of above 100 should be viewed with uneasiness.

Lord Dawson next referred to two families, each of two generations, in one of which no member had a systolic blood pressure of above 110, while in the other no member had a pressure of below 130. These examples prompted two reflections: (*a*) That vaso-constriction played a very varying part in different individuals; and (*b*) that hyperpiesia began as an exaggeration of a quality—in other words, that it began in the realm of physiology to end in that of pathology.

A special investigation had been made in 650 school-children between the ages of 10 and 17, and 52 of these, or 8 per cent., had shown a systolic pressure of over 130 mm. Hg. The observations had been multiplied to exclude factors of excitement, and it had not been found possible to identify hyperpiesia with any particular type of child. Prospects of a school examination did not raise the pressure; on the other hand, the classes for the Oxford Senior Local Examinations, attracting as they did ambitious children, in whom they might be supposed to engender some anxiety as to their prospects in life, showed a relatively high incidence of hyperpiesia in the children attending them. He believed that in these cases the high blood pressure was an expression of a type of mind which was naturally striving and ambitious. In this group of 8 per cent. one could fairly rule out any degenerative structural process; it was more likely that these cases showed an inborn peculiarity of function, which might become so accentuated as to produce damage in varying degree. Correction might be effected by choice of suitable careers; otherwise vaso-constriction, progressively provoked by slighter and slighter stimuli, might cause a condition of high pressure to become more or less permanent.

A more detailed investigation of nine cases selected from the same group had elicited more definite support of this view; these were all boys, and showed in most cases, in addition to the raised systolic pressure, palpable radial arteries and accentuated aortic second sounds; in four, moreover, there was hypertrophy of the left ventricle, and in three a blood-urea of over 0·050 per cent. One case had a urea concentration of under 1·5 per cent. As would be expected, there was considerable variation among these cases; they merged on the one hand with a physiological, and on the other with a pathological state, those showing the most definite cardiac hypertrophy being those subjected to the greatest strain. Pathological evidence was, of course, not easily forthcoming; but in one exceptional case of a girl, often showing a pressure of 240 mm. Hg systolic and 140 diastolic at the age of 19, it had been possible during an operation for decapsulation of the kidneys to secure portions of the organs for examination. Lord Dawson showed these sections on the epidiascope. They illustrated (1) marked hypertrophy of the tunica media of the larger arteries; (2) slight fatty degeneration of the intima of the smaller arteries; and (3) patches of partial atrophy of the tubules due to small round cell infiltration.

In later life high blood pressure might supervene upon a normal pressure in youth, and here it was necessary to consider, in addition to family or individual predisposition, the possible effects of chemical agencies, of pressor substances (such as guanidine derivatives), and of the products of erroneous metabolism. But in his view hyperpiesia had its chief origin as a habit of body and mind,

and crept into life without subjective symptoms; so that unless it were disclosed by a fortunate medical examination it might latently lead to actual structural disease.

Prof. E. H. Starling emphasised the extreme importance of the blood-supply to the vaso-motor centre in the medulla. This centre did not control its own blood-supply by vaso-motor fibres, but did so indirectly by controlling the pressure elsewhere. A raising of the blood pressure in the circle of Willis was compensated for by a lowering of the pressure elsewhere, and vice versa. This condition was demonstrated by an illustration of an experiment, in which it was shown that if the intracranial contents of a dog were cut off from the heart and connected with the heart of another dog, any variation which might be produced in the blood pressure in the cranial arteries was compensated for by an opposite change in the blood pressure in the other parts of the body, this change taking place at similar rate to that of the variation of the cranial blood pressure. The chief factors involved in maintaining blood pressure were: (1) The output of the heart, which was proportional to the flow into the heart; and (2) the peripheral resistance, which was under the control of the vaso-motor centre, and was chiefly regulated in the splanchnic area. Thus in man the pressure was maintained at 85 to 130 mm. Hg. But, he asked, what determined the average height? The answer was that the blood pressure was determined by the blood-supply that was necessary for the brain; thus even in heart failure the pressure must not fall, since at all costs the blood-supply to the medulla must be maintained.

In hyperpiesia the pressure was set at a higher level, and any oscillation took place around it. He submitted that the change in the level had to be effected and maintained because otherwise the vaso-motor centre would not receive an adequate amount of blood for its needs. Pursuing this line of thought, they might inquire what were the conditions under which the vaso-motor centre would, without a rise of blood pressure, obtain an insufficient blood-supply. These might be (1) gross changes in the vessels; (2) claudication; and (3) arterial spasm; but, more important than these, seemed to be (4) changes in the capillary walls—i.e., alterations in size and in permeability. If from such causes the pressure in the peri-capillary lymphatics were raised (a condition possibly present in uræmia and the toxæmias of pregnancy, and in the condition he referred to as "wet-brain," accompanied by transient paralyses) this peripheral pressure would explain the rise of general blood pressure necessary to overcome it. There was no evidence that a diseased kidney was directly responsible for the raised blood pressure. Cohnheim, indeed, regarded a rise of pressure in renal disease as compensatory; but even so the stimulus could only act through the vaso-motor centre. In conclusion, he submitted that in investigating any possible prime cause of hyperpiesia, it should always first be asked how that cause could modify the blood-supply to the vaso-motor centre in the medulla.

Dr. McCrae (Philadelphia) expressed his feeling that the most obvious things about blood-tension were the difficulties it presented. In certain cases of childhood a raised pressure appeared a temporary condition, in others it persisted; possible causes were organic disease and infections, early renal changes, and, in the case of hypo-pituitarism and the menopause endocrine influences. He wished particularly to emphasise the fact that here for the general practitioner was an opportunity for clinical research over a length of time such as hospital and consulting practice did not offer.

Dr. Batty Shaw said that he believed the main origin of hyperpiesia was toxic. The vaso-motor centre was not the only site of nervous control of the vessels; there was also the neuro-muscular plate, and he submitted that this point of junction might be affected by chemical agents. What were the toxic agents? Not, he thought, infective poisons which were depressor in their action, but such pressor substances as were derived from the suprarenal, the pituitary, and the renal cortex. He stressed the importance of recording the daily blood pressure as regularly as the pulse and temperature, and reported a case of hyperpietic crisis in which the pressure had suddenly dropped from 230 to 130 with accompanying coma and high blood-urea, and almost as quickly returned to the original level. He ascribed such changes to physiologically antagonistic toxins.

Dr. Otto May, speaking as medical officer to the Prudential Assurance Co., Ltd., while admitting that many sources of error arose in estimating the blood pressure of an individual, held that, where statistical calculations depended upon a very large number of cases, the individual fallacies became of relatively little importance. Such statistics showed that an increased systolic pressure was a definite menace to longevity; with pressures over 170 the outlook got rapidly worse, while at 200 and over the mortality was eight times the normal. He referred with regret to the relatively slight use made by medical men of the sphygmomanometer as compared with the stethoscope. He made his opinion quite clear that statistical information, even of the clearest kind, was not to be applied in individual cases without due consideration of other factors in the physical condition.

Dr. Geoffrey Evans, after reference to early researches which had not confirmed anatomical changes expected in cases dead with hyperpiesia, remarked that in the natural experiment of chronic interstitial nephritis they were now able to observe that hypertension and vascular disease were not necessary accompaniments of renal disease. He believed in the toxic origin of hyperpiesia, but was more concerned with the condition itself. Hyperpiesia was a clinical state quite independent of the kidneys; as Sir Clifford Allbutt had said, it did not end in nephritis—its evolution was rather towards heart disease and hæmorrhage. Its hall-mark was cardiac hypertrophy, as demonstrated by X rays and the electro-cardiograph. Retinal vascular changes and modifications of the aortic second sound were other characteristics of it. The morbid anatomy was quite definite, as compared, for instance, with that of a case of migraine. In hyperpiesia the body was plethoric, the heart large, and there was a definite hypertrophy of the arterial walls best seen on macroscopic section of the otherwise normal spleen and kidneys. Microscopically, the intima appeared swollen with endothelial cell-proliferation, which, being avascular, went on to fatty degeneration of the intima. The tunica media might or might not be hypertrophied, or the hypertrophy might be apparent only.

Dr. F. H. Humphris referred to benefits in hyperpiesia from electrical treatment; he maintained that every application produced a lowering of the maximal arterial pressure by 10 per cent.

Dr. W. Salisbury-Sharpe, from a study of 500 men of between the ages of 60 and 65, had found that a considerable degree of activity was compatible with high blood pressure.

Dr. A. Cawadias regarded hyperpiesia as a syndrome. Two diagnoses were necessary: (1) Diagnosis of the syndrome itself; here it must be recognised that there were local hyperpieses giving rise to crises—e.g., in the lower limbs and the heart. (2) Diagnosis of the cause. The influences which might act upon the vaso-motor centre were: (*a*) toxic—as in nephritis; (*b*) chemical—e.g., adrenalin; and (*c*) nervous. He considered the investigation of youth to be the best avenue of research.

Dr. Stacey Wilson referred to varying differences between estimations of the blood pressure made by different methods—e.g., tactile and auscultatory. He regarded these peculiarities as worthy of investigation by general practitioners. In one case the auscultatory method gave the higher reading, in

another the tactile. Why was this? He was sure that toxic conditions were important: syphilis alone was evidence enough of this.

Prof. R. J. S. McDowall believed that in emotional and toxic states there was a condition of strain, as a result of which a functional overaction took place. He would cut down the protein of the diet in hyperpiesia.

Lord Dawson, in replying, said it was difficult to believe that hyperpiesia in children was toxic; an innate tendency in them seemed much more probable. Anxiety, and especially repressed anxiety, might raise the pressure and possibly there was a metabolic factor. But the border-line between functional error and morbid entity seemed to him, in this case at any rate, to be a blurred one.

FRIDAY, JULY 24TH.

The Uses and Abuses of Endocrine Therapy.

In opening the discussion on this subject, Lord Dawson being in the chair, Dr. W. Langdon Brown said that he would deal with the uses of endocrine therapy, leaving Prof. Swale Vincent to deal with the abuses. An endocrine preparation might be used either to replace a deficient internal secretion (thyroid, insulin) or for its pharmacological action (adrenalin). But before it could be used on a rational basis it must be shown that the gland in question forms an internal secretion; that its active principles can be extracted; and that the extract can be so administered as to admit of its utilisation by the body. In very few instances had all these criteria been satisfied, so that clinicians had been forced into more empirical methods. Empiricism had won success in other spheres—e.g., quinine, salicylates, and, previous to the discovery of vitamins, cod-liver oil—and moreover the functions of the thyroid itself had been made out at the bedside. Nevertheless, the empirical method was to be used critically, and the study of the basal metabolic-rate and of the blood-sugar curve had recently been useful in confirming the effects of extracts: of more limited use at present was the estimation of the calcium of the blood.

Thyroid extract fulfilled all the above criteria; its principle was a general quickener of metabolism. A total daily dose of 6 gr. of the extract of the fresh gland (which was one-fifth as strong as that of the desiccated gland) needed seldom to be exceeded. It was worth using in children suffering from stunted growth, nocturnal enuresis, night-terrors, and relaxation of ligaments—e.g., knock-knee, flat-foot, and lordosis—as well as in cases presenting the stigmata of hypothyroidism; it was the great stimulant to growth. Where growth was complete, thyroid was an agent katabolic of those products of incomplete combustion which, in conditions of thyroid deficiency, infiltrated many of the tissues.

The use of *parathyroid* extract was more justifiable now that Collip had isolated its active principle. Its uses were: (1) Sedative to the nervous tissues (e.g., in tetany, petit-mal, and eclampsia) by effecting a rise in the blood calcium, and (2) to promote healing in chronic sepsis (chronic gastric ulcer, varicose ulcer). It was absorbed when given by the mouth. There was a mass of evidence pointing to *adrenalin* as a general sympathetic stimulant to be used in such emergencies as acute asthma, vaso-motor paralysis, heart failure, and hypoglycæmia, but it was of little or no use for substitution therapy in Addison's disease. Extracts of the anterior lobe of the *pituitary* certainly appeared to have given results, when administered orally, in cases of deficient growth from pituitary insufficiency. As to the posterior lobe, he believed that its secretion, pituitrin, had an important association with the reproductive processes, in support of which belief he mentioned among others the following observations: (1) Fröhlich's syndrome was always associated with undeveloped sexual organs. (2) Dixon and Marshall had shown that a corpus luteum in the ovary in pregnancy could completely inhibit the action of ovarian extract which normally, on injection, caused an immediate flow of pituitrin into the cerebrospinal fluid. Just before parturition, however, the ovarian extract would again, on injection, profoundly stimulate the production of pituitrin, leading to uterine contractions and lactation. Similarly, he had found clinically that an extract of corpus luteum soon stopped excessive lactation in a woman who had an enlarged pituitary fossa. Diabetes insipidus, believed to be associated with posterior lobe deficiency, had been treated with some success by spraying extracts of pituitary into the nose.

Speaking of *pancreatic* extracts, there could be no doubt of the efficacy of insulin and there were considerable numbers of patients who, having had a course of insulin, had later been able to give it up and yet to keep free of glycosuria. Dr. Langdon Brown protested strongly against statements which led patients to deprive themselves of this most valuable remedy of diabetes. Insulin had also been used tentatively for hyperthyroidism, and it should be used in the acute hyperthyroidism following operations on the thyroid gland. It could reduce the basal metabolic rate. It might be hoped that *ovarian* extracts, recently shown by Allen and Doisy to produce definite effects, might, if they could be freed from corpus luteum, benefit ovarian inadequacy, especially in the miseries of the climacteric in woman. He was sceptical as to the value of other endocrine extracts, though in the case of the testis the grafting method offered a chance of effective treatment.

Prof. Swale Vincent said that there should be no essential difference between the nature of observations made by laboratory workers and clinical workers. It was the duty of the latter, as of the former, to carry out an experiment if an opportunity presented itself. The difficulty for him appeared to lie in making satisfactory, or indeed any, criteria to justify the term "experiment." It was, for instance, useless to claim that a drug had done good, unless they had a moderately clear idea of what would have happened if the drug had not been used; yet this obvious consideration had been universally overlooked even by medical men, and the public had not even begun to be suspicious of the resulting and blatant advertisement of the drug vendor. Again, he contended that the information derived from the observation of the effects of juices squeezed out of certain organs did not justify at all the assumption that the physiological action of those organs was the same as the pharmacological action of their extracts. If this were so the extirpation of the organs should produce effects exactly opposite to the effects of injecting the extracts. This did not occur. For instance, extirpation of the adrenal glands did not cause an immediate fall in blood pressure. Similarly, to prove that pituitrin was the internal secretion of the pituitary, it was not enough to obtain it by extraction from the gland.

If this erroneous type of conclusion were accepted—that the pharmacological effect of an extract justified the assumption of a similar physiological effect of the gland from which it was obtained—what were they to say about the other ductless glands and tissues? All tissue extracts in general (other than those of the adrenals and pituitary) had the effect of lowering the blood pressure, and by this argument it was rational to supply every month a new substitution product or hormone for lowering the blood pressure, derived from each tissue whose extract had been examined. In France it had been argued that each tissue produced its own substance for lowering its own local blood pressure. It could not be urged too strongly that the effects of these extracts were not specific and had nothing to do with any internal secretion on the part of the tissue in question. To argue that because extracts of the cerebral cortex lowered the blood pressure, it was therefore one of the functions of the cerebral cortex to manufacture and pour into the circulation a hormone, the duty of which was to keep down the blood pressure, would be absurd. Many physicians, however, had not claimed that their

endocrine practice was based on sound physiological data, but had insisted on the empirical value of endocrine extracts. While there was no objection to this attitude, it was only reasonable that the a posteriori evidence of relief or cure must be satisfactory. In many instances this was far from being the case, and the scientific value of conclusions drawn under such circumstances was nil.

His conclusions were that there were only two clear cases where they could employ a true substitution therapy—those of the thyroid and the pancreas; and only the thyroid was known to produce effects when given by the mouth. The cases, however, of the parathyroid and the ovary were perhaps in a transitional stage, and the preparation made by Allen and Doisy from the ovaries appeared to be active if injected hypodermically. Out of the long list of preparations of 42 organs and tissues advertised by the manufacturing druggists and prescribed by the "clinical endocrinologists," only one—the thyroid—was of proven value when given by the mouth.

Dr. Gardiner Hill spoke about work done by the St. Thomas's Hospital Medical Unit upon thyroid and pituitary therapy. (1) In obesity thyroid extract had been given by the mouth together with whole gland pituitary. Many of the cases were women at the menopause or just after parturition. Their sugar-tolerance curves differentiated two groups—namely, recent cases, in which there was a slowly decreasing sugar tolerance, and longer established cases, in which the sugar tolerance was high. In the latter group thyroid was useful. The more recent cases of the first group were some of them potential diabetics. Whole gland pituitary helped the sugar curve to fall. (2) In undergrown children feeding with extract of anterior lobe of pituitary was useful, and the rate of growth might be more than doubled by this means, which also increased the sugar tolerance in every case. Giving thyroid in addition produced an even greater effect, which could be to some extent checked by estimation of the basal metabolism. Orchitic and ovarian extracts had been found quite ineffective in cases of amenorrhœa.

Mr. Kenneth Walker spoke from the surgical aspect only, and formulated certain principles concerning living transplants. (1) The more nearly related the donor to the host, the more successful the effects; grafts from another species from that of the host were rapidly absorbed owing to the development of fibrous tissue in the graft and leucocytic invasion from the host. (2) Different tissues disappeared with different rapidity—e.g., the medulla of the adrenal quickly disappeared while the cortex might survive. (3) In transplantation experiments it was possible to feminise male guinea-pigs only if they had been castrated, and to masculinise female guinea-pigs only after removing the ovaries. (4) A successful graft had to be calculated to supply a deficiency; any excess of material transplanted was apparently physiologically inert. There was still much to be understood in the varying relations between the host cells and the transplant.

Dr. H. W. C. Vines described endocrine therapy as an undeveloped science. They were attempting to discuss it as though it was fully understood, and he strongly deprecated destructive criticism, whilst admitting the danger of enthusiasm. In such a science there was necessarily empiricism, but so also was there in vitamin and light therapy, and in treatment even by simple drugs like squill. He had recently obtained some evidence that the influence of parathyroids upon the blood-calcium was due to a protective colloid, which kept certain organic complexes of calcium and lecithin from precipitation. From experiments he had made in vitro it appeared probable that a quantitative relationship might be found between the amount of parathyroid substance used and the calcium content of experimental solutions. It was not surprising, therefore, that in tetany the oral administration of parathyroid was generally such a failure, while grafts or extracts injected might cure the condition; for it was a question of the maintenance in the blood of a definite quantity of that protective substance. With regard to sprue, he pointed out four things: (1) Dr. Scott had had no success from the use of calcium salts. (2) He had had good results from using the "commercial" extracts of parathyroid with calcium salts. (3) The giving of thyroid invariably caused a relapse. (4) Scott's work had been confirmed by the work of other observers.

Prof. F. Langmead said that while Dr. Langdon Brown had emphasised the value of trial in endocrine therapy, many of the trials were not real tests at all, comprising too often the use of substances they had no knowledge of, in strengths which were quite uncertain, for treating diseases which were not understood. The value of thyroid medication in cretins was, of course, indubitable. He had also seen good results in rheumatoid arthritis and in large goitres of puberty, but he thought it was of no value in enuresis. Referring to certain observations of Mr. Kenneth Walker, he stated that large quantities of the gland might be taken without any signs of overdose. He asked, referring to parathyroid, where it all came from? He thought much of the work on the blood-calcium to be worth little, owing to sources of error in the estimations. He did not believe that adrenalin when swallowed could reach the stomach in sufficient strength to be of use in gastrostaxis. He agreed that pituitary when given by the mouth had a pharmacological action by influencing the blood-sugar. Cases of "hypopituitarism" were a mixed lot, compared with true Fröhlich cases which were rare. The blood-sugar was the criterion of true hypopituitarism. Dr. Langdon Brown had only attempted to claim results for six glands, so that the long list of suggestions for organotherapy fully justified the cold douche of Prof. Swale Vincent.

Dr. Woods Hutchinson (U.S.A.) considered that only six or seven out of 72 American endocrine preparations were active. He referred to the great importance of sodium iodide in diminishing the frequency of goitre in the States.

Sir James Berry professed himself whole-heartedly in agreement with Prof. Swale Vincent. He particularly protested against statements made with regard to the use of parathyroid in tetany, which was not probably due to parathyroid deficiency at all; the laboratory work on this subject had impressed him unfavourably. He considered that the term hyperthyroidism was used too loosely; it was sometimes applied to people with enlarged thyroid glands who happened to have a rapid pulse. If anything, these people were *hypo*-thyroidic. He suggested the term dysthyroidism as useful; symptoms might be very mixed—e.g., myxœdema with tachycardia. Iodine was good for early goitre of childhood, but too much of it might produce a true hyperthyroidism. Lack of iodine, however, was not the cause of endemic goitre any more than lack of quinine was the cause of malaria.

Dr. J. A. Nixon asked who it was that was creating the demand for the 72 inactive endocrine products, and would confess to doing so. The meeting would fortify the recipients of daily advertisements to resist them.

Dr. Langdon Brown, in replying, referred to a direct relationship existing between the basal metabolic rate and the pulse-pressure (excluding, of course, cases of aortic regurgitation). A pulse pressure of over 40 meant a basal metabolic rate above normal; this might be very useful in deciding whether cases of enlarged thyroid at puberty were hyper- or hypothyroidic. In many cases of tetany the calcium content of the blood was lowered, and the use of parathyroid, which raised the blood calcium, was justified.

Prof. Swale Vincent, replying, said that a certain measure of agreement between the two sides was beginning to appear. It was the advertising pamphlets and those medical men who wrote papers for them that required attacking.

JOINT MEETING OF THE SECTIONS OF DISEASES OF CHILDREN AND OF PUBLIC MEDICINE.

WEDNESDAY, JULY 22ND.

RHEUMATIC INFECTION IN CHILDHOOD.

THIS joint meeting was held under the Presidency of Dr. Robert Hutchison. Dr. F. J. Poynton (London), in introducing the subject, said there was no issue in practical medicine more important and more full of possibilities. Rheumatic heart disease was a frequent event under 12 years of age and a great cause of suffering and early death. In the young the heart had great recuperative powers if it was only rested and protected. There were many people with organic rheumatic heart disease living quiet useful lives and often doing more for the community than many a headstrong hale citizen who squandered his life in riotous living. Since chorea was so frequent among school-children in our large towns, there must surely be, he said, some discoverable factor straining the nervous system. He was not sanguine as to the eradication of this disease in the near future, but a great advance could be made by more careful organisation, greater supervision, and more widespread study. The first essential was to come to a decision as to what symptoms were good evidence of acute rheumatism. When the machinery was in better working order the inquiry could be extended to border-line cases. When county hospitals with facilities for prolonged rest, supervision, and education were established, it would be better to use them at first chiefly for children recovering from a first attack of rheumatic heart disease or from slight damage rather than for chronic cases. They would then be able to convince the public of the good achieved, and money would be forthcoming for the extension of the work. In the Hartfield Hospital in Sussex, established by the Children's Invalid Aid Association, for girls up to 15 and small boys, encouraging results had been obtained. Out of 123 rheumatic children admitted only two, after a period of much cold and rain in the first week in March, developed fever and rheumatic pains, whereas in London, during the same period from October, 1924, onwards, many cases of acute rheumatism, he said, were admitted to his hospital wards. The Hartfield Hospital was run on open-air lines, and although when it began its work the climatic conditions could not have been worse, the children gained remarkably in health and strength and their cardiac condition improved. Until we have a specific remedy for rheumatism, he said, the best we can do is to build up the body tissues. After puberty the tendency to cardiac rheumatism diminishes.

Further study would teach us what home surroundings were specially detrimental. We needed to know more about the modes of onset. The speaker's records of 1108 probable first attacks of acute rheumatism under 12 years of age showed 673 cases of carditis, 626 of arthritis, 617 of chorea, 344 of sore-throat, and 94 of nodules. One group of cases began with sore-throat, arthritis, and morbus cordis. A second group began with chorea, frequently accompanied by morbus cordis. A third, fortunately a small group, began with symptoms of great severity: fever, vomiting, diarrhœa, or sore-throat, followed by arthritis, carditis, nodules, rapid anæmia, and even chorea. Such fulminating attacks were most frequent in the younger children and in those with a strong family tendency to rheumatism. Such a first attack might prove fatal or leave the child terribly injured. A fourth group began with less acute though definite symptoms. These symptoms subsided, but left the child with fleeting pains, shortness of breath, and a tendency to develop the "rheumatic state." In such cases the first early dilatation of the heart was the key to the situation and was easily overlooked. In another group of cases one manifestation alone, such as chorea, was predominant. There were exceptions, but it was advisable to consider all cases of chorea as of rheumatic origin. From the aspect of prevention Dr. Poynton attached great importance to chorea, which was so frequently associated with the most important of all cardiac lesions—namely, mitral stenosis. It also suggested nerve over-strain as a factor predisposing to acute rheumatism. He was convinced that a widespread inquiry into the subject of chorea by school medical officers would supply valuable information. Heart disease as a sole manifestation was even more important than chorea. The most frequent early heart lesion was dilatation, and the percussion of the deep cardiac dullness in childhood was a remarkably accurate method of investigation. Another group of cases began with sore-throat, enlarged cervical glands, fleeting pains, and dilatation of the heart, and this group was easily overlooked. Much had been written against laying undue stress upon cardiac murmurs, but a cardiac murmur in a child always needed consideration. With Dr. Paine the speaker had been responsible for establishing the doctrine of the local focus in rheumatic disease, and the modern doctrine of enucleation of the tonsils was founded on this theory. He believed that the time had come when we were justified in pressing upon the public the need for a concerted effort to protect our children from the effects of rheumatism.

Dr. Robert A. Askins (deputy M.O.H., Bristol) stated that the school medical department of Bristol had been for some years paying attention to this problem, and paid a tribute to the enthusiasm of Dr. Carey Coombs, of the Bristol General Hospital, and Dr. C. E. K. Herapath, of the Bristol Royal Infirmary, in investigating the clinical condition of a large number of their cases. Dr. Coombs had found that about two-thirds of the cases of rheumatic heart disease in Bristol began between the ages of 5 and 15. He estimated that probably between 12,000 and 20,000 deaths occurred annually in England and Wales from rheumatic heart disease contracted during the school age. Our knowledge of the cause of acute rheumatism was so limited that we were unable at present to suggest measures for its prevention. In his opinion the disease was due to an organism of low infectivity with a special condition, such as prolonged or massive dosage. There were in addition secondary factors. He thought that infection rather than heredity was the cause of the disease running in families. If they could not prevent, they could, however, aim at early ascertainment and diagnosis, early treatment and after-care, and training of the cases which were crippled. For early ascertainment the School Medical Service had the opportunities afforded by three medical examinations during school life, and the arrangement by which a child with symptoms could be medically examined at any time, at the instance of teachers and parents. In order to encourage the latter method a circular had been issued in Bristol couched in simple language on lines suggested by Dr. Poynton. For early treatment Dr. Askins favoured the cardiac clinic. Cases should be sent from the cardiac clinic to an open-air country hospital school. When the patient returned from the hospital, training for a suitable occupation should be provided in a branch of a school for cripples. Throughout each stage the child should be under the supervision of medical experts who had special skill in cardiology. He believed a satisfactory scheme could be provided at comparatively small cost. A few cardiac beds under the care of a specialist might be established at each country cripples' hospital. All this work should be carried out by joint action between the clinician and the department of the medical officer of health and be linked up with the work of the voluntary hospitals and of the private practitioner. There was great need for research and the State must help.

Dr. Carey Coombs welcomed alliance between the clinician and the administrator. In order to secure early diagnosis many doubtful cases would have to come under review. Biochemical reactions were of no assistance as yet. They had only physical signs

to rely upon. Hospitals must in future supply both open-air and occupation like the Forbes-Fraser Hospital in Bath.

Dr. Reginald Miller referred to the B.M.A. Committee appointed as the result of the discussion at the Portsmouth meeting. Its report was expected shortly and should prove a valuable document for determining the lines of investigation. He also referred to two groups of early rheumatic children, one being composed of highly nervous children, and the other group, with symptoms such as anæmia, night cough and tonsillitis, were frequently mistaken for early tubercle. The Public Health Service must settle the connexion between poverty and rheumatism. Choreic symptoms were not always rheumatic.

Dr. J. A. Glover (Ministry of Health) spoke as to the effect of damp and overcrowded buildings. He also referred to the American idea of moving rheumatic patients to a less rheumatic place. He would like to see the experiment of compulsory notification for five years in two areas with a varying incidence of the disease with a thorough investigation and a mobile research unit attached to each. Lancashire with Manchester as a research centre would be one suitable area.

Dr. Vincent Coates drew attention to a type of small subcutaneous fibroid nodule occurring chiefly along the ulnar border and over the spinous processes, which he had found to be a valuable early sign of rheumatism among the school-children in Bath. (At the close of discussion Dr. Coates demonstrated the presence of these small nodules on a patient (v. p. 326).)

Dr. R. E. Thomas said that it took him three months to learn to palpate the small nodules described by Dr. Coates, but he now relied upon them as a very valuable sign. He did not think these rheumatic affections were associated with poverty but rather with harassed parents. He thought they were more frequent in low-lying districts. They were a common cause of long absence from school, and accounted for 20 per cent. of such absence in London in 1922. (v. p. 326.)

Dr. A. P. Thomson (Birmingham) drew attention to the value of failure in writing as an early sign. The ordinary larger nodules were very rare in Birmingham, and he would be interested to see if Dr. Coates's smaller nodules were equally rare. He thought that the type of rheumatism and the predominant signs varied in different districts. The low-lying sites in Birmingham, near the so-called rivers, seemed to favour the prevalence of rheumatism. He thought house dampness was important and familial prevalence unimportant. It did not appear to be associated with neglected children. There was a hospital for 50 rheumatic children in Birmingham in which the duration of in-patient treatment was long, over six months. Their results from removal of tonsils were encouraging. Out of 70 cases treated only one had persistent valvular disease. Removal of the tonsils seemed to protect against cardiac trouble, but not against rheumatism. He thought the cardiac cases, and especially cases of chorea, should be kept out of general hospitals for cripples. There was no need for special cardiac clinics. Of 60 cases discharged from the Birmingham Hospital 35 had led normal lives for over a year.

Dr. T. Eustace Hill (M.O.H., co. Durham) thought cardiac clinics might be necessary in county areas. He welcomed coöperation with the clinicians.

Dr. Noy Scott (Devon) thought compulsory school attendance in all weathers and damp clothes had a bad effect in rural areas. He also drew attention to the ineffectiveness of modern damp-proof courses, even those sanctioned by the Ministry, and to the harm done by building on unsuitable sites.

Dr. F. E. Wynne (M.O.H., Sheffield) described the constitution of the Sheffield Medical Advisory Committee, which had instituted inquiries with regard to encephalitis lethargica and mammary cancer and intended to take the question of rheumatism in childhood as its third subject for inquiry. He believed that the large amount of routine work in the School Medical Service stood in the way of special inquiries such as they were discussing.

The Chairman emphasised the gravity of the problem and the need for early diagnosis. He hoped for good results from Dr. Coates's new sign. He distrusted the specialists and believed that the medical man with all-round experience was superior to the cardiologist. The financial side was important, as this was now a poor country. Their ignorance of ætiology was the crux of the question. He believed that chorea was associated with the mental strain at school. In his experience rheumatism was not a slum disease, but rather associated with hard-working, successful artisan families.

Reply.

Dr. Poynton, in his reply, hoped for a chief centre of research in London. He agreed that these diseases were not associated with the lowest poverty, but with the artisan class and anxious parents. His reason for objecting to the pressing of salicylates was that he found them bad for the rheumatic nervous child. He did not dispute their value for adult arthritis and for the relief of pain, but for cardiac cases in children he preferred the ethyl ester of para-methyl cinchonic acid.—Dr. Askins, in replying, expressed himself strongly in favour of cardiac clinics after his four years' experience in Bristol. They needed experts with great experience of heart cases to deal with these children satisfactorily.

SECTION OF PUBLIC MEDICINE.

THURSDAY, JULY 23RD.

FOOD MANIPULATION IN RELATION TO HEALTH.

A discussion on this subject was held under the presidency of Dr. T. E. Hill. Dr. William G. Savage, in the opening paper, said we could conveniently divide the effects of food manipulation into three groups, according to whether (i.) it affected the nutritive value of the food, or (ii.) produced bacterial or parasitic infections, or (iii.) resulted in chemical contamination. As regards (i.) he wished to protest against the views expressed by extremists. For example, he was much impressed with the importance of vitamins in our dietary, but he did not believe in advocating vitamins on grounds which we could not substantiate. As regards bacterial contamination of food, while dust or air-borne sources may be considerable, pathogenic bacilli were far more likely to be added from direct human handling. Great importance should be attached to the use of food which is sound initially. For example, *Bacillus botulinus* would find a suitable nidus for multiplication on or within damaged fruit and might produce a considerable amount of toxin. The danger of the survival of spores or even of toxin after heat-treatment was greatly increased by the use of damaged fruit or other food. It was important to classify the risks to health from manipulated food. Manipulated foods could be grouped according to the danger inherent in each different sort. In the first group came foods which were non-multiplying media for bacteria, and which were only eaten when cooked, such as ordinary cereals, rice, oatmeal, &c. In the next least dangerous group were non-multiplying media which were not subsequently cooked, such as bread. A third group contained foods which were multiplying media for bacteria, which were not subject to slow cooling, and which were subsequently cooked. Sausages were a good example. Sausages often contained numerous living bacilli and, being frequently only lightly cooked, a good many of the bacilli might survive. Sausages therefore should be well cooked, especially the German types of sausages containing blood, for these were more liable to harbour pathogenic organisms. In the fourth group came food which was a multiplying medium, was heated in its preparation, and subsequently cooled slowly, and then eaten without further cooking. If a food-poisoning bacillus gained

access to such food when cooling, the temperature conditions favoured rapid multiplication. Many outbreaks of food poisoning had originated from this group, which included brawn, potted meats, and meat pies. In the most dangerous group were foods similar to the latter type, but containing viscera, and since pathogenic bacilli were more likely to be present in livers, lungs, and intestines, their preparation required special care. Fortunately these types of food were not greatly favoured in this country.

The following table showed the kind of food incriminated in 203 outbreaks of food poisoning in the British Isles, many of which were investigated by Mr. Bruce White, pathologist to the Home Office, and himself.

	Number and percentage.		Number and percentage.
Canned meat ..	31	Manipulated meat	10 (4·9)
" marine products ..	27 (30·5)	Fresh meat	33 (16·3)
" fruit ..	4	Fruit and vegetables (not canned)	8 (3·9)
Milk	14 (6·9)	Other foods	6 (2·9)
Milk products ..	16 (7·9)		
Made-up meat ..	54 (26·6		

As regards chemical contaminations, all preservatives except those scheduled as permissible should be prohibited, and the use of all permissible preservatives should be adequately declared on the label.

Dr. C. E. Goddard (M.O.H., Harrow-on-the-Hill) said it might be impossible to achieve perfect cleanliness, but it was incumbent on the public health service to prevent gross contamination. Imported food was a difficulty which might be dealt with by consular guarantees at the place of export. They had had recent revelations as to the conditions under which figs and sultanas were packed at Smyrna. He advocated the wrapping of bread. The M.O.H. had no power in the shops. He instanced the objectionable practice of customers pinching fruit, &c. Places where food is packed and made up should be licensed.

Dr. C. W. Cunnington said we needed more knowledge as to the effect of cold storage on the value of meat.

Dr. H. Scurfield agreed with Dr. Savage as to the tendency in some quarters to make exaggerated statements. He also deprecated the misleading loose general statements which were frequently made, even by those engaged in research work on this subject. He would like to see more work done to determine the vitamin content of such common foods as jam and marmalade. He thought there was plenty of evidence of something wrong with our dietary in the universal prevalence of dental decay and constipation and in last year's poor recruiting statistics. We were surely on safe grounds, he said, in advocating more milk and dairy products, more fresh fruit, and vegetables.—Dr. Noy Scott asked how it was that people could eat decomposed food in the form of game with impunity.

Dr. F. E. Wynne (Sheffield) said that the British Medical Association should insist upon the notification of cases of food poisoning. Opportunities for investigation were frequently lost by the failure of medical men to notify. He deprecated the use of much-advertised proprietary articles of food which were frequently extreme examples of food manipulation and the nutritive content of which was extremely expensive. It was unfortunate that such articles of food achieved such wide advertisement by their use at many infant welfare centres.

Dr. Hill said they were liable to "stunts" in public health, but that it was important to get what good they could from them. The wrapping of bread, for instance, might not be very important in itself, but was a good object-lesson. He hoped that the new regulations for preservatives would be issued unmodified.

Reply.

Dr. Savage, in reply, said there was no evidence that putrid food caused outbreaks of food poisoning. Such outbreaks were due to contamination with specific bacteria. *Bacillus botulinus* was endemic in the soil of some parts of California, but with ordinary precautions of cleanliness and the use of sound food the danger was infinitesimal. The Loch Maree outbreak was the only one in this country which had been traced to *B. botulinus*.

THE INFLUENCE OF LIGHT ON HEALTH.

A discussion on the influence of sunlight and artificial lights on health was opened by Dr. Leonard Hill in an interesting and valuable paper indicating the present state of knowledge on the subject. At the outset he described the varying effects of rays according to their wave-length. Smoke pollution cut off the shorter rays. What with mist, cloud, smoke, glass windows, and clothes, city people got almost no exposure to ultra-violet rays during the winter, and while every effort should be made to prevent smoke pollution and to educate people to expose their skin to the sunlight, a great deal could be done by means of arc baths which should be installed not only in hospitals, but also in schools and public baths. A skilled attendant would be required, but arc baths were no more dangerous than a public swimming bath. Given a long-flame arc, taking 2½ to 3 kilo-watts, with white flame carbon poles, and a wire net screen a yard away from it, children could safely dance within one or two yards of the lamp for five minutes, nude save for a loin cloth. As acclimatisation came on and the skin browned the time could be lengthened to 10 or 15 minutes. Such baths once or twice a week would do much to maintain good health and prevent such diseases as rickets, tuberculosis, rheumatic fever, skin diseases, and catarrhs. If tungsten-cored carbons were used the ultra-violet intensity was greatly increased and the time of exposure could be reduced to a third or even less. Goggles must be worn to prevent conjunctivitis. A great many lamps were at present on the market and many were so weak in ultra-violet radiation as to be of little use. Some were quack instruments giving only violet light. Ultra-violet radiation had power to cure many resistant skin diseases such as ichthyosis, psoriasis, eczema, and boils, and marasmic and delicate children were improved by it, and mothers who could not nurse their babies might be made more efficient. Some observers reported good results from the combination of red light and ultra-violet rays. The action of ultra-violet rays was not interfered with by ordinary daylight, therefore one could have the arc lamps in light rooms with the windows open. Febrile cases should be treated by light with very great caution. The hospitals of the future should be bungalows with open-air wards, verandahs, and unroofed open-air courts, about which the beds could be run according to the weather. Girls wearing open-necked blouses and short skirts with artificial silk stockings secured more ultra-violet radiation. Men would do well to alter their dress and get rid of the close collar and long trousers. While exposure to the lower part of the leg to light and cool air was a preventive of varicose veins, over-exposure in cold winter weather might produce a chilblain-like erythema. Physiological knowledge as well as fashion should rule dress and prevent both over- and under-exposure. There was no evidence that radiation could endow an inactive food with the growth qualities pertaining to vitamin A. The reaction of the skin appeared to have the same curative effect, whether produced by the mercury vapour, the white flame carbon arc, the Tungsten arc, or the Tungsten filament incandescent lamp with quartz globe. One clinician preferred lamps weak in ultra-violet rays and strong in heating effect with long exposures five days a week. Another used lamps powerful in ultra-violet rays with short exposures once or twice a week; one liked to produce a mild erythema; another avoided erythema. One liked to produce pigmentation; another thought pigmenting should be avoided. The need of the moment was to standardise the lamps for treatment and to find out the most economical methods of exposure. Dosage could easily be measured by the

effect of ultra-violet radiation on the 30 per cent. acetone methylene-blue solution. Any loosely-woven garment let these rays through, but artificial silk fibre, being an acetyl-cellulose product, was more transparent than protein products, such as silk and wool fibres. If modesty required such material to be worn, longer exposures were needed. It had been stated that artificial sun treatment could not approach the real article. Dr. Hill's experience, however, was that properly regulated arc-light baths, with advice as to exposure to the open air, exercise, and diet, could effect cures in London which appeared to be no less good than those reported from Alpine sanatoriums. In order to eliminate tuberculosis from cattle similar exposure to light and air should be secured. Cattle as well as children might be given arc-light baths in the winter. Cattle also needed food rich in vitamin A during the winter and calcium to compensate the drain caused by heavy milking. Vitaglass, which allowed the ultra-violet rays to pass through, might have a use for verandahs and skylights.

Dr. G. B. Dixon (Tuberculosis M.O., Birmingham) said he had obtained good results in many forms of tuberculosis from the general light bath. Cases of lupus did well. Enlarged cervical glands first grew bigger and then gradually disappeared. Cases of hilus tuberculosis did well. Some bone and joint cases did well, while hip, sacro-iliac, and spinal cases did not, in his experience, show such good results. The tone of the muscles improved greatly under treatment. Non-pigmenters had to be treated more carefully. In some bone and joint cases with concurrent pulmonary disease the improvement in the bone or joint condition had taken place without the pulmonary lesion becoming worse.

Dr. Dora Colebrook gave her experiences of light treatment at the Islington centre. Small babies suffering from dietetic trouble did very well. Flabby muscles were toned up. In cases of malnutrition and vomiting the vomiting often ceased. There was an increase in vigour and brightness. Relapses after the cessation of treatment indicated success and the need for more continuous treatment. She believed in short courses of short exposures and found the treatment useful for nursing mothers. There was a distinct place for light treatment at infant welfare centres. She hoped that other centres would try the treatment and keep faithful records of the results obtained.

Dr. A. Eidenow said that many chronic fibroid pulmonary cases did extraordinarily well under light treatment. Infants and adults differed in their need of light. Beneficial effects were secured in very many resistant skin diseases, such as psoriasis and eczema. In the case of bone-tubercle, radiograms showed that there was increased calcification and density of the bone as the result of light treatment.

BAN ON POOR-LAW BUILDING.—The Minister of Health has refused to sanction the scheme of the Kensington Guardians for the enlargement of the X ray department and the erection of a new nurses' home at Kensington Infirmary. Mr. Neville Chamberlain declines to regard the plan as urgent, and adds that "in view of the scarcity of skilled labour available for housing schemes, and the uncertainty as to the future of the Poor-law generally, it is considered that all Poor-law building work which is not immediately necessary should be postponed."

SUSSEX PROVIDENT SCHEME.—The following amounts have just been paid to the institutions named for services rendered to subscribers of the Sussex Provident Scheme during the first six months of this year: Royal Sussex County Hospital, £1540; Royal Alexandra Hospital for Sick Children, £340; New Sussex Hospital, £325; Brighton, Hove, and Preston Dispensary, £150; Haywards Heath Hospital, £135; Sussex Eye Hospital, £115; Sussex Maternity and Women's Hospital, £105; Sussex Throat and Ear Hospital, £105; Brighton, Hove, and Preston Dental Hospital, £65; Uckfield Cottage Hospital, £50; Stephen Ralli Memorial Laboratory at the Royal Sussex County Hospital, £10; and Royal East Sussex Hospital, Hastings, £5. These sums make a total of £2945 for the half year. For the whole year of 1924 the amount distributed among the hospitals was £5520.

Reviews and Notices of Books.

SURGERY.

Practical Surgery Illustrated. By VICTOR PAUCHET. Translated by F. R. B. ATKINSON, M.D., C.M. Edin. With an introduction by Sir CHARLES GORDON-WATSON, C.M.G., F.R.C.S. Vols. V. and VI. London: Ernest Benn, Ltd. 1925. 18*s.* 6*d.* per volume.

THESE two volumes complete the English edition of Pauchet's atlas. Like the former parts, the drawings are unique in their clarity and depict the most varied procedures. In Vol. V. de Martel describes the operation for trigeminal neuralgia. The rest of the book is by the author, except Chapter IX. on the treatment of large scrotal hernia, which has been drawn up by A. Buquet. Pauchet's chief work lies in the abdomen, and his conclusions and remarks on the conditions delineated are interesting and full of suggestion. Some of his results are remarkable. He has implanted into the duodenum, with success, a persistent biliary sinus resulting from cholecystectomy, the patient being well 15 years later. In two other cases the common bile-duct was repaired around a tube and the patients are well seven and nine years after it. The author is at his best in describing gastric operations, of which he is a master. Another extremely good section is that dealing with carcinoma of the colon. In Vol. VI. different aspects of these two subjects are again brought in review. The operation for fistula in ano is described, the inguinal operation for femoral hernia, removal of a ureteric calculus, and some gynæcological procedures. The work now completed makes no pretension to be a complete treatise on operative surgery, of which many departments remain untouched, but the discriminating surgeon will find the book profoundly interesting and will lay it down with a sense of having profited by its perusal.

Die Chirurgie. By Prof. Dr. M. KIRSCHNER and Prof. Dr. O. NORDMANN. Berlin: Urban and Schwartzenberg. 1925. Vol. I., 18 marks; Vol. II., 18 marks.

A System of Surgery by a number of German-speaking contributors is appearing under the general editorship of Profs. Kirschner and Nordmann. Two volumes of this system are now before us. The first begins with an historical account, necessarily in bare outline, of the development of surgery, which will prove useful for its very complete bibliography. General and local anæsthetic methods are next discussed, followed by a section on antiseptic and aseptic methods. These chapters lose somewhat by compression; the English reader would have been glad to learn more of the local anæsthetic methods in vogue, for instance, and only one way of sterilising catgut is described. On the other hand, the chapter on the use of X rays and radium in surgery contains just what the general surgeon desires to know, and a well-balanced view of the therapeutic value of these agents is given. An account of X ray burns is included. The last chapter in this volume deals with constitution in relation to disease, an unfamiliar section to the English reader and worth perusal. The second volume, which is concerned with the surgery of the lymphatic glands, breast, thyroid, thymus, adrenals, and hypophysis, leaves little to be desired. The accounts of the diseases treated are systematic, straightforward, and conform to generally accepted ideas. The chapter on the breast contains a very complete set of illustrations of normal and morbid anatomy.

So far as it goes at present this System of Surgery can be cordially recommended to the English reader. Not the least of its merits is that it is essentially German in its outlook. To see things from the standpoint of an entirely different school of surgery

is always profitable. Thus we find matters over which there is controversy in this country regarded in quite a different light in this book. For instance, fibro-adenoma of the breast is classified amongst the epithelial tumours, and the statement is made that it more easily changes into a carcinoma than a sarcoma. Carcinoma of the breast is accepted as spreading by the venous path at a certain stage of the disease. A number of statements will make the English student speculate upon the basis for his accepted beliefs. The standard of writing is high and the illustrations are admirable.

Chirurgische Propädeutik. By Prof. Dr. ERICH SONNTAG. Leipzig: George Thieme. 1925. Pp. 269. R.m. 9.60.

THIS book is for the use of students just beginning their clinical work. The author intends it to give instruction in those methods of examination which can be carried out with the unaided senses. So the book is divided up into sections which deal with the interrogation of the patient, inspection, palpation, auscultation. smelling, and measuring. Each section is divided into a general and a special part. Elementary methods of diagnosis are notoriously difficult to teach to the novice, and instruction of this kind is best given practically in the wards. Owing to the arrangement followed in this book, the students would have to refer to several sections if he desired to know how to examine, for instance, a tumour of the breast. Nevertheless, methods of clinical examination, as far as it is possible to impart such knowledge by the written word, are well described, and the illustrations are helpful.

CLINICAL PATHOLOGY.

Serum Diagnosis of Syphilis by Precipitation. By R. L. KAHN. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. Pp. 237. 15*s*.

IN this book the author gives an account of the precipitive test he has devised for the diagnosis of syphilis. The complicated technique required in the Wassermann test has stimulated many workers to produce a simpler test. So far a certain amount of success has been obtained by the precipitive methods based on the works of Klausner, Sachs Georgi, and others. The test depends on the fact that when syphilitic serum is mixed with the ordinary Wassermann antigen, or with a special antigen, a fine precipitate is formed. In the Kahn test for syphilis detailed in this monograph very careful standardisation of all the ingredients is performed as a preliminary to the main test. In fact, so numerous are these standardisations that it is doubtful if the Kahn test can be considered to be any less complicated than the Wassermann test itself—except for the fact that there is in the test one less variable factor, the complement. The test can be used for cerebro-spinal fluid as well as blood. Details are given of comparative tests against the Wassermann reaction, in which the test came out well, but it will, of course, take years before the real value and reliability of the test can be determined. This volume is chiefly intended as a technical manual for laboratory workers and as such gives an admirable account of the test and the technique employed.

The Cerebro-spinal Fluid in Clinical Diagnosis. By J. GODWIN GREENFIELD, M.D., B.Sc., M.R.C.P., Pathologist to the National Hospital for the Paralysed and Epileptic; and E. ARNOLD CARMICHAEL, M.B., Ch.B., Resident Medical Officer, National Hospital for the Paralysed and Epileptic. London: Macmillan and Co., Ltd. 1925. Pp. 272. 12*s*.

THE need of an authoritative work in English upon this subject has now been supplied. The book before us opens with a very detailed and satisfactory account of the technique of the operations of lumbar, cisternal, and ventricular punctures. The anatomy of the membranes of the brain and cord and the physiology of the cerebro-spinal fluid are competently dealt with in Chapter II. To the laboratory worker the section on technique will prove particularly useful.

The authors lay great stress upon their indebtedness to the work of Westrezat, and it is true that no one working upon the changes undergone by the cerebro-spinal fluid in disease can fail to recognise this debt. Perusal of the book, however, makes it evident that it contains few, possibly no statements the truth of which has not been actually tested by the authors themselves, and a good deal of the value of the book depends upon their own original observations. There are a number of long-recorded observations the value of which has escaped recognition and the authors do good service merely in drawing attention to them. Such a hitherto rather neglected observation is the lowering of the chlorides in the cerebro-spinal fluid in tuberculous meningitis. That this is the first and for a time may be the only sign of tuberculous invasion of the meninges is a fact that has hitherto escaped the attention it deserves. In dealing with the glucose content of the cerebro-spinal fluid the authors seem to overlook the wide fluctuations undergone by this substance in the blood under normal conditions.

This is a work which will make a wide appeal; it contains much matter of the utmost importance to medical men, whether in practice or working in the laboratory, hitherto only available in a foreign language or scattered through the pages of periodicals and proceedings. The authors have arranged their matter so that both the clinician and the laboratory worker can readily find exactly what they want.

PREMATERNITY.

Candid Counsels to Expectant Mothers. By FLORENCE STACPOOLE. London: A. and C. Black, Ltd. 1925. Pp. 173. 3*s*. 6*d*.

THIS book has been written for young or expectant mothers, especially those of the educated classes, by a lecturer to the National Health Society of London who knows her subject thoroughly and writes on it convincingly and well. The four sections of the book deal adequately with: Care of the health during pregnancy; care of the health during confinement; care of the health after confinement; care of the new-born infant. Short appendices contain information on the preparation to be made for the baby's arrival, twilight sleep, birth control, and the method suggested recently by Prof. Louise McIlroy of oiling the baby in lieu of washing it with soap and water during the first nine days after birth. The author's style is chatty, but the book is pleasant to read. Some misgiving may be felt as to the wisdom of including in a book written for mothers so many prescriptions—e.g., a diarrhœa mixture containing laudanum and several mixtures for indigestion—but apart from this we have nothing but praise for a guide-book which should command a wide circulation among nurses and expectant mothers.

Approaching Motherhood. By GEORGE L. BRODHEAD, M.D. New York: Paul B. Hoeber. 1925. Pp. 193. $1.25.

THE purpose of this book is to answer some of the questions which most women approaching motherhood are likely to ask. The contents are therefore arranged in the form of question and answer, the range of subjects discussed covering the period from pregnancy to the puerperium. Some of the sections are extremely short and sketchy, such as that on the anatomy of the female genital tract, which is discussed in less than 60 lines. The chapter on popular fallacies deals with only four fallacies, one of which—"that it is dangerous to raise the arms

above the head for fear of causing a knot in the cord"—we do not recollect having come across; another, "that pregnant women have what is known as cravings," is a fact and not a fallacy at all. Some of the points raised are trivial—e.g., Do babies ever weigh 15 pounds? Is the theatre harmful? Am I carrying high or low? do not appear to be particularly helpful. And on one or two points the author is in disagreement with accepted views in this country, when he urges, for instance, that the "comparatively small and harmless operation" of circumcision shall be performed on every boy within two weeks of birth; or that a baby should have its mouth swabbed out with cotton and boric acid at the time of the daily bath. The book is written in plain and simple language.

CHILD WELFARE.

The International Year Book of Child Care and Protection. Second edition. Compiled from official sources by EDWARD FULLER. London: Longmans, Green and Co., and *The World's Children*, Ltd. 1925. Pp. 565. 7*s.* 6*d.*

THE new edition of this year-book is expanded and improved. Opportunity has been taken to revise the tables and a hundred or more of the sections have been practically rewritten. The "Who's Who" section has, we are glad to see, been omitted, its place being taken by an international bibliography of books and periodicals published during 1924 on child care and protection. Dr. W. M. Feldman has contributed a chapter on Hebrew law in relation to children, and the index has been amplified. Mr. Fuller, who is editor of the *World's Children*, remarks how little one-half of the world knows even yet as to how the other half lives, and the primary object of the year-book is to help the peoples of the world to a better understanding of the things which concern the life and care of its children. As a compiler, he has been embarrassed by the lack of common standards in making statistics and classifying facts. Even in England the legal definition of "infant" is not commensurate with the accepted use of the term, and disparities of this nature vitiate comparisons which might usefully be made. The year-book is one more plea among many for reform in the demography of child welfare. Mr. Fuller's book in its new guise will usefully serve the interests of children in many countries.

LEGAL MEDICINE.

For Members of the Legal Profession and Police Forces. First edition. By JOHN GLAISTER, Junr., M.B., Ch.B. Glasg., Assistant to the Professor of Forensic Medicine, University of Glasgow; Lecturer on Medical Jurisprudence to the Glasgow Police Force. Glasgow: Alexander Stenhouse. 1925. With 4 illustrations. Pp. 158. 5*s.*

LEGAL medicine is approached from very different angles by the doctor, the lawyer, and the police officer. Points which may appear of great importance to the medical man may be of secondary significance to counsel conducting a prosecution or a defence. The police officer is concerned with the tracking of the criminal and collecting all the available evidence, whilst the lawyer sifts this evidence in order to present his case. Dr. Glaister has attempted to put to members of the legal profession and to the police force the medical point of view, and to illustrate the working of the medical mind when medico-legal problems are involved. He has also set out the difficulties with which the doctor has to contend and the dangers of dogmatic statements. The book appears to be the outcome of lectures to the police force at Glasgow, and as such forms an excellent manual for their guidance, especially in the direction of enabling the police, whether by action or inaction, materially to assist the medical man in his duties. Dr. Glaister discusses the signs of drunkenness, describing pupillary reactions, and gives differential points for the diagnosis of a fit. The police officer should, of course, regard every case as serious until the surgeon has given his opinion, and the risk lest a little learning should lead the police officer to make rash diagnoses is, we think, very small. To the lawyer the work is more limited in its usefulness. It may enable him to appreciate rapidly the significance of many medical conditions of criminal import, but where a prosecution or a defence involves more detailed consideration he will need to consult a larger text-book. Dr. Glaister, however, finds space to discuss in detail several classical criminal cases, aptly making his points from the lessons learned in these cases.

The book is simply and clearly written and the author has collected much practical information into a small space.

CHAMBERS'S ENCYCLOPÆDIA.

A Dictionary of Universal Knowledge. Edited by DAVID PATRICK, LL.D., and WILLIAM GEDDIE, M.A., B.Sc. Vol. III., Cata to Diop. Vol. IV., Diop. to Frei. Vol. V., Frej. to Humb. Vol. VI., Hume to Man. London: Chambers's. 1925. 20*s.* per vol.

THIS encyclopædia is large enough to furnish an adequate outline of any subject referred to without being too bulky to fit into an average study library. The style of printing is attractive—the title of each article standing out in bold type; the information is concise and accurate and for the most part up to date. In some of the more technical articles where recent discoveries have altered the whole aspect of the subject, the addition of new paragraphs hardly meets the situation and an entirely new article is called for. The article on Embryology, for example, in Vol. IV. contains many references to work which is not now the last word on this rapidly growing subject. In Vol. VI. the historical account of the development of the University of London well explains the anomalies of the present organisation, while the description of the foundation of activities of the League of Nations, including its important health sections, is excellent. Indeed, it is impossible to turn over the pages of these volumes without being arrested by a title, an engraving, or a map which suggests a new point of view, or makes clearer the panorama from an old one.

JOURNALS.

INDIAN JOURNAL OF MEDICAL RESEARCH. April, 1925.—This number is of special interest. E. D. W. Greig and S. Kundu contribute three papers on Kala-azar, in one of which they compare the effect of treatment with various recently prepared antimony compounds, such as urea-stibamine and stibamine glucoside.—J. A. Sinton continues his series of studies on the Indian Species of Phlebotomus, paying attention to *P. argentipes*, the species recently suspected as being the vector of kala-azar, while R. B. Lloyd, L. E. Napier, and R. O. A. Smith have studied the blood meal of this insect identified by precipitin antisera, from which it appears that the insect feeds on the blood of cows in preference to that of man; the inference is drawn that the distribution of this disease observed in India is dependent on the absence of these animals from certain districts.—J. Cunningham and S. R. Pundit describe a new endemic focus of kala-azar in Southern India, L. E. Napier the environment associated with its prevalence in Calcutta.—U. N. Brahmachari and B. B. Maity continue their studies on the Chemotherapy of Antimonial Compounds.—M. J. Parmanand contributes the second part of his studies on the organism of rat-bite fever.—L. A. P. Anderson, A. Howard, and J. L. Simonsen have made important observations on the ætiology of lathyrism in India. The number also contains the eleventh section of W. F. Harvey's "bacteriological and laboratory technique."

THE LANCET.

LONDON: SATURDAY, AUGUST 15, 1925.

VOLUNTARY HOSPITAL ACCOMMODATION.

SOME four years ago when, particularly as an aftermath of the war and generally as a result of social changes, the whole voluntary hospital system in this country was ailing, the Government provided a stimulating draught of £500,000 to be administered pro rata to institutions which showed a readiness to help in their own cure. The distribution of this sum was entrusted to a Voluntary Hospitals Commission appointed in 1921.[1] This is the point chosen here to begin comment on a long story. The Commission accomplished their task with what must have been unhoped-for success, considering its nature, and then undertook, in April, 1924, at the instance of Mr. WHEATLEY, then Minister of Health, "to inquire into and report upon the extent of the additional voluntary hospital accommodation required in England and Wales and the best means of providing and maintaining it." The report on this work, which has just been issued,[2] is a record of valuable and painstaking labours, and the information obtained sets forth a proof of the vitality of the voluntary system and of its hold upon the country

It might have been an easy matter to erect ideal standards of hospital accommodation without regard for time or money, but the Commission have left such ideals alone, concentrating upon the consideration of such extensions as were immediately necessary, and such, which is more, as were capable of accomplishment within a reasonable period. The careful study of the answers to questionnaires sent out to all the voluntary hospitals through the local voluntary hospital committees, wherein all the facilities for the institutional treatment of disease in each locality were collated, has made it possible for the Commission to formulate practical and valuable propositions for the solution of many sides of a complicated problem. The accommodation of our voluntary hospitals, as everyone knows, is at present inadequate to the needs of the people; the inclusion in any estimate of all the subsidiary accommodation provided by cottage hospitals, and convalescent and recovery homes still leaves it badly short, while the Poor-law infirmaries remain only potential adjuvants. It is of interest to note that the data furnished by hospital waiting-lists proved, on close inspection, to be an unreliable basis for assessment. It was found, for example, that maternity cases for which beds had been booked weeks or months in advance were sometimes included in the waiting-list figures, while on the other hand a notable shortness of the list in an area where the accommodation was obviously inadequate might be explained by the reluctance of medical practitioners to enter the names of patients whose chances of admission were merely problematical. With regard to coöperation with Poor-law infirmaries, the report states that astonishing differences were found in the attitude of different areas towards Poor-law institutions. The majority of local committees were unfavourable to coöperation; when schemes of mass contribution are in existence, it appears that the public regard any plan for coöperation with Poor-law infirmaries as an attempt on the part of the voluntary hospitals to escape an implied bargain; further, in many parts of the country prospective patients have strong prejudices against Poor-law beds. On the other hand, however, from a careful inspection the important fact emerged that the number of vacant beds in institutions at all comparable with voluntary hospitals was much smaller than was commonly supposed. If Poor-law hospitals are to be conscripted for further service, their function, it would seem, must be differentiated from that of the voluntary hospital; those who know more than the surface of the matter will not be surprised to learn that the filling-up of the infirmaries with the surplus sick is not the prompt remedy that many speakers have told us. The Commissioners suggest that the larger voluntary hospitals be reserved for cases requiring special diagnostic facilities or a high degree of technical skill, while the local authorities' hospitals should deal with patients whose primary need is skilled nursing. In allocating the many gradations between these two types of case requiring treatment, individual and local considerations would be the deciding factor in the choice of institution. The patient suffering from surgical tuberculosis, for whom the local authority has a statutory responsibility, has been indicted as the cause of much present pressure on voluntary hospital beds. The Commission believe that if local authorities undertook the provision of beds for all their cases, whether by paying the capital cost of any necessary hospital extension or, in the case of surgical tuberculosis, by adding surgical wards to existing sanatoriums, a considerable number of existing beds would be released for other cases. Many of the smaller hospitals, particularly the cottage hospitals, are at present not adequately used. In many instances this is due in large measure to difficulties in regard to suitable medical and surgical staff, and the Commission advocates the linking up of such institutions with the nearest big hospital. The future multiplication of cottage hospitals does not find favour with the Commissioners, who hold, also, that the extension of convalescent homes would do little to relieve in-patient pressure. But there is a considerable weight of opinion in favour of increasing the number of available recovery homes, a system which is as yet only in the experimental stage.

The outcome of the investigations of the Commission is that some 10,000 additional beds are required in England and Wales, including London. The actual figures submitted by local committees outside of London amounted in England to 9525 beds and in Wales to 1089 beds, or a total of 10,614 beds, and King Edward's Hospital Fund recommended an addition in London of 2088, but after careful consideration of the reports of the Commission's inspectors it was thought that that total figure might be reduced by about 20 per cent. The addition of 10,000 beds represents an increase of approximately 22 per cent. on the existing hospital accommodation. At present-day prices, excluding the cost of site, furniture, and equipment, it is estimated that a reasonable figure for the cost of extending plain buildings of a utilitarian character would be £400 per bed. This represents a formidable sum, and the Commissioners find themselves forced, however, reluctantly, to the conclusion that a substantial measure of State aid is essential. There are many pitfalls to be avoided, as the report points out, in administering a State

[1] THE LANCET, 1924, ii., 615.

[2] Ministry of Health. Voluntary Hospitals Commission. Report on Voluntary Hospital Accommodation in England and Wales. H.M. Stationery Office. 1925.

grant in order that, among other things, the voluntary principle may not be endangered, while needs and expenses vary in different localities. The proposal submitted by the Commission is therefore to allow a grant of 50 per cent. of the cost up to a maximum of £200 per bed, subject, of course, to the remaining 50 per cent. of the expenditure being raised locally or being available from existing building funds. It is further proposed that the task of formulating comprehensive schemes for local areas should devolve on the local committees of the voluntary hospitals. It may be that, in view of these extra duties, such committees will require extension and reorganisation, and to secure the fullest measure of effectivity the Commissioners do particularly urge the importance of full and frank conference with the medical staffs of the hospitals concerned. The Commissioners are prepared, if the Government see fit to accept their proposals, to act as a central body responsible for the distribution of this grant.

We trust that the Government will come to the aid of the voluntary hospital system in the suggested way; for on all sides the improving prospect is admitted. Without the assistance and encouragement of the State there is in most cases little chance of essential extensions being undertaken within the next few years. Failure to meet the present needs of a growing population will not only entail a great amount of avoidable suffering, but it must also react to the prejudice of the voluntary system. There is no greater stimulus to subscribers, particularly to small subscribers whose regular support is essential to the solvency of voluntary hospitals, than the feeling that sufficient accommodation is provided to ensure reasonable hopes of admission. And it must be remembered that small subscribers, in the form of contributing patients, grow daily a greater financial asset.

MIND AND BODY.

OF all concepts that most often to be used casually is among the least definable—namely, "mind." At the present time it has taken on a biological significance and expresses the life reaction of the entity which anatomically is represented by "the organism." No longer is mind regarded as a something essentially apart from body; psychology now moves hand in hand with physiology, though we are still far from making the relations definite. It is evident, however, that, though the central nervous system is essential for the function of mind, mental function involves much more than just that one system of the body.

Dr. JOSEPH SHAW BOLTON, for his recent Maudsley lecture, read before the Medico-Psychological Association,[1] chose as title Mind and Brain, and the matter and tone of his discourse throw into strong relief the controversy between the two opposing schools of mental research, the practical anatomists and the experimental psychologists. The lecturer belongs to the former and takes a determined stand on the facts that have been indisputably proved by years of patient anatomical labour. He regards the work of FREUD, MCDOUGALL, and others who bring speculation and conjecture to elucidate their observations as an unfortunate and mischievous excrescence that so far from being of any service can only result in vitiating the work of men who, from their hard-won knowledge of the structure of the brain, are qualified to speak with authority on the nature of the mind. In the lecture he gives an able comparative survey of the anatomy and habits of insects, birds, and mammals, and includes sound comments on human psychology. Dr. BOLTON exposes the error that many habitually make of attributing human motives to lower animals; he shows that bees and ants have no kind of reason or sentiment to guide their collective labour, and that the behaviour of the trained bird is but an elaborate mechanical reaction. Both insects and birds have a rigid skeleton that has ensured their survival at the price of completely forbidding them to evolve further. He gives a detailed analysis of the brain measurements of a tomtit, a parrot, and a pheasant, showing that the cerebral pallium that gives the mammal its variety of function and capacity for further development is in all these representative birds a simple root to the lateral ventricle. He concludes from this that birds are merely elaborate machines, possessing neither mind nor a nervous mechanism for the evolution and performance of mental functions, a result certainly that it would be hard to controvert on the behalf of the many bird-lovers who claim for their pets an almost human intelligence. Dr. BOLTON sketches the development of mammals and shows that the growth of feeling and thought processes in higher animals like dogs and anthropoid apes depends entirely on the evolution of the highly complex cerebral pallium. His treatment of psychology—the disputed territory between himself and Prof. MCDOUGALL, whom he quotes destructively throughout—is the climax of his lecture. He deals ably with language, voluntary thought, recorded experience, and recollection, the meaning of normal personality, of grades of cerebral activity, and of free association and dreams; after an analysis of feeling, and of the relative importance of education and the instincts, he considers mental disease, the best existing example of racial immaturity. He holds that the variety of mental deficiency and dementia amongst us indicates how slowly our minds evolve. "The greater the rapidity of evolution the more numerous the variations above and below the average—the more common must be individual genius and individual mental deficiency and dementia." Comparing human voluntary thought with the caricature of it seen in the lower animals, he holds that we are irresistibly impelled, "not to the idea that the lower animals think, but to the certainty that in the mass human beings do not."

Considering how valuable is Dr. BOLTON'S insistence that truth must be sought by patient spade-work in the observation of facts, we regret the manner of his attacks on the concept of the "unconscious mind," and by implication of the spade-work of those observers who have invented and enlarged upon it. Truth is to be found by establishing facts, not by stating negatives—indeed, to quote Dr. BOLTON against himself, "even if many theories turn out to be false and many facts prove to be valueless, the individual who has produced them, so long as he has worked honestly, is the better for what he has done." Psychological function depends on brain structure, but brain anatony is unintelligible unless the psychologists explain it. That function results in an extraordinary development of structural provision for possible future function the lecturer allows, and may it not be that the "unconscious mind" of the psychologists is the vague functioning of that unrelated structure of the brain pallium which stands ready to be specialised and developed as the human race moves forward towards its fulfilment? Truth at best is but a relative phenomenon, varying in its facets in accordance with the view-point of the observer. Considering the difficulty of the task in which workers

[1] Journal of Mental Science, August, 1925.

in these fields are engaged, it is of the highest importance that every searcher for knowledge towards the understanding of life should realise that the truth may, nay must, be many-sided, and that, because his truth does not at once conform to another's, therefore the other is wrong. It is unfortunate that the broad view is so rarely to be found, but let us plead for a more concerted attack upon this most evasive of problems, seeking that the recognition of the usefulness of principles, whether psychological or physiological, be not obscured by the unbalanced and premature forcing of conclusions.

RHEUMATIC INFECTION IN CHILDHOOD.

FROM the point of view of public welfare few subjects could be found of greater importance than that of rheumatic infection in childhood, which was discussed at a joint meeting of the Sections of Diseases of Children and of Public Medicine at the annual meeting of the British Medical Association on July 22nd. The toll of human life from heart disease originating from this cause during the school age amounts, according to Dr. ROBERT A. ASKINS, of Bristol, to between 12,000 and 20,000 annually in England and Wales alone, whilst the hospitals have difficulty in finding accommodation for both the early cases and those suffering from serious sequelæ. A full account of this discussion will be found elsewhere in this issue, where it will be seen that practically all the speakers urged the need for speedy research into the many problems involved. Dr. F. J. POYNTON, who has done great public service during many years in this respect, reiterated the necessity for closer inquiry concerning various ætiological factors, especially as regards home surroundings, the various modes of onset, the prevalence of chorea, and the importance of nervous over-strain among school-children. There appeared to be little doubt in the minds of the various speakers as to the infective nature of the disease; but many of them, including Dr. ROBERT HUTCHISON, the President, held strongly to the view that acute rheumatism cannot properly be described as a disease of slums, but is rather to be found amongst the children of the more well-to-do artisan class. This belief is borne out in an article by Dr. VINCENT COATES and Dr. R. E. THOMAS which we publish to-day. These observers have made careful clinical and ætiological inquiry concerning 50 cases selected at random from a much larger series of school-children seen during school inspection and at clinics. They find that in practically every case the parents of the affected children were in steady work and belonged to the skilled artisan section of society, the weekly gross income per head of the various families being from five to seven shillings in about 45 per cent. of cases and above this figure in the remainder. In a considerable number of cases the houses inhabited by the patients were damp, but overcrowding was notably absent. As regards treatment the most pressing need of the moment was considered by most speakers to be the establishment of more clinics for the care of such children, and the provision of institutions where long-continued rest could be properly obtained. The success of the Hartfield Hospital in Sussex has in this respect been very encouraging. In view of the drain on the life and wealth of the population which rheumatic fever and its consequences at present entail, expenditure on such establishments and on adequate research centres should be a sound national investment.

Annotations.

"Ne quid nimis."

THE MEMBERSHIP OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

WE do not know if the significance of the amended By-law 112 of the College has been fully appreciated by our readers. The by-law now runs, "Every candidate for the Membership shall furnish proof of having attained the age of 23 years," whereas the age for admission to the examination for the diploma was formerly 25 years. This means that men of 23 years of age can now take the examination and gain the diploma without waiting for two years, by which time many of them have settled down into practice and have neither the time nor the inclination to submit themselves to an examination. Many men at 23 have just finished house appointments, and their examination knowledge having not yet faded, their recent clinical experience admirably fits them for the trial before them. In the past some men, who might have secured the M.R.C.P. had they been 25, have embarked on some special line of work, such as pathology or X rays, and so when they became eligible were both immersed in special work and lost touch with general medicine, and especially with the important branch of routine clinical examination. As time went on these men rose to eminence in their special branch of medicine, but were not eligible for the F.R.C.P. because they had not taken the M.R.C.P., and they and also the Royal College of Physicians of London were the losers. At the Royal College of Surgeons of England the final examination for the F.R.C.S. can be passed before the age of 25 years, while the successful candidate has to wait for the diploma until he attains that age. At the Royal College of Physicians of London this relaxation was not allowed.

AN HISTORICAL REVIEW OF PUBLIC HEALTH.

WE print this week the fourth and last instalment of Dr. J. H. L. Cumpston's reflections on public health administration, provoked by a visit to America and England paid by him in his capacity of principal administrative health officer to the Commonwealth of Australia. Dr. Cumpston lays his finger on some weak points in administration which are largely the result of the haphazard way in which the whole structure has grown up. No doubt his kindly but trenchant criticism will be taken to heart by those concerned, and we propose in the next few weeks to provide further material for laying down sound principles of international hygiene by seeing how the various European countries have solved the problem in the light of careful studies made by the Health Bureau of the League of Nations.

During the present year several other senior members of the medical profession have written sketches of the motives and principles which have actuated public health progress. Sir Arthur Newsholme in his book emphasised the fundamental value of the crude dictum that the search for public health was a crusade against organic filth, though the value of personal hygiene is fully recognised in its pages and scientific work with educational effort to secure its application are urged. Prof. E. A. Winslow, of Yale, has stressed the personal side of public health work, the value of public health nursing, and of educational work. It is evident that only by a *vue toute ensemble* can the whole truth be encompassed. The sketch[1] now before us by a distinguished leader of the medical profession in America will prevent any too narrow view of the factors of reform which have preceded our present

[1] Public Health in Theory and Practice: An Historical Review. By W. H. Welch, M.D., LL.D. Yale University Press. London: Oxford University Press. 4s. 6d.

condition. The occasion of the second annual Sedgwick lecture was utilised by Dr. W. H. Welch, of Baltimore, to review the pioneer work of this great American sanitarian. Dr. Welch contends that America's chief contribution to public health progress has been in the extended use of the laboratory as a means of control of disease; and the outstanding examples of this are the work of the Lawrence Experiment Station on water purification and the introduction by Hermann Biggs of laboratory diagnosis as a means of controlling infectious disease in New York. A more recent contribution of America to public health consists in its prohibition of the sale of alcoholic drinks, and it is not irrelevant to contrast this with Dr. Welch's reference to the compulsory control of a disease by diet as evidenced by the obligatory administration of lime-juice begun in the British Navy in 1796. The lecture brings out very lucidly the value of a working hypothesis in the advancement and application of knowledge, and the whole history of public health can be written around successive hypotheses on which action, more or less successful, has been based. In respect of tuberculosis we have the well entrenched older views of the constitutional element in tuberculosis, and on the other hand the remark of Koch, which Dr. Welch heard him make, that so far as tuberculosis is concerned "predisposition is merely proximity to the bacillus." Attention is drawn to the millions spent for the eradication of yellow fever, and wasted, under the influence of a wrong hypothesis as to its origin; and it is added "the same is largely true of typhus." This remark cannot be taken too literally, for from England typhus had been almost completely banished before its transmission by body lice, and probably in no other way, was suspected. The lecture is worthy of its author and will be read with interest by all. Dr. Welch rightly takes the view that courses of hygiene in the medical student's curriculum do not suffice; for there is no subject of medical study without some bearing on preventive medicine, and every teacher should consider it his duty to emphasise these aspects.

DENTAL PROPAGANDA.

AT the May meeting of the Dental Board of the United Kingdom a good deal of time and thought were given to the subject of propaganda on the care of the teeth. Mr. F. Dyke Acland, the chairman of the Board, stated in his opening address that he was impressed by the amount of general good-will existing in many quarters towards the great object which the Dental Board had in view—namely, the improvement of the dental health of the nation. He expressed his belief that effective publicity might be attained without very considerable expenditure, if only it was properly directed and guided, and at a later stage in the proceedings the Board went on to allot a sum not exceeding £4000 during the present year for the purpose of propaganda. So far the publicity work of the Board has largely been in association with education and health authorities. During last year, for instance, more than 132,000 copies of a leaflet were distributed through 347 education authorities among teachers in primary and secondary schools; requests for dental films, including the popular "Tommy Tucker's Tooth," were received from 25 education and health authorities. But the Board, not content with this valuable educational work, set up an Advisory Committee with a view to working out the methods for a more general campaign. This Committee included representatives of the various dental associations, the Board of Education, the Food Education Society, the National Association of Insurance Committees, and of a number of manufacturers of dental supplies. The recommendations of this Advisory Committee, as presented to the Board, included the spending of a sum of £7000 in the first year on a scheme of press propaganda, the engagement of a journalist of suitable qualifications, and the envisaging of a campaign lasting three years at least. It is in this direction that some members of the dental profession, and those not the least influential, are feeling that the Board may be going a little too fast. An editorial article in the *British Dental Journal* for August regards the proposals with dislike, if not alarm, as an abandonment of the cherished tradition inculcated by the British Dental Association for nearly half a century—"Thou shalt not advertise." In this article it is pointed out very forcibly how the "stunt game" is now so irrevocably associated in the public mind with some private interest lurking behind it, that the advertising pitch has been spoiled for orthodox professional play. The *Journal* is all in favour of propaganda through educational authorities, school teachers, medical officers of health, health societies, and the like, and sees in the education of parent and child in good dental habits, through the provision of good school dentistry, an agency for improvement without reproach. It is rather a piquant position for the dental profession, a section of which has in the past not been loth to use all available methods of publicity, now to be putting the brake on the Dental Board's proposed campaign of propaganda. We are in full sympathy with propaganda on the need for a healthy mouth, but we share the dislike felt by the *British Dental Journal* for a scheme of propaganda which entails extensive press publicity, the engagement of a special journalist, and a request for subsidies from the dental profession and the dental trade. With regard to the dental trade, we are sure that the best manufacturers concerned wish for no such publicity; and whatever its immediate success, the public will inevitably suspect in it a subtle way of increasing the income of the dental profession. It would, we believe, defeat its own end, and the *Journal* is probably right in thinking the scheme to be in the nature of a kite flown by the Board to test the feeling of the dental profession.

EYE SURGEON AND NURSE.

IT has often been said or implied that it is not the business of the nurse to know anything about the procedures which the surgeon may choose to adopt. But many surgeons have found that it is just such knowledge which is likely to increase her value, and certainly a theatre sister who does not know the uses of the instruments of which she has charge is likely to make mistakes which one who has familiarity with their use will avoid. For the nursing of eye cases a general training is not enough, and for operative work it is genuinely essential for the nurse to have expert guidance if she is to do justice to her patient. For these reasons we should like to commend a practical handbook [1] for the ophthalmic nurse which she cannot fail to find useful. This little book is evidently written by one who has had experience in the training of probationers in an eye hospital. It is neither too elementary nor is it prolix. Written in simple language, each chapter is of practical value and the illustrations are very clear. Just so much explanation of the anatomy of the eye is given as nurses need. Bandaging is well illustrated and a form of bandage described which, so far as we know, is peculiar to the Western Ophthalmic Hospital, where it is found to be very effective. After a chapter on the external diseases of the eye, which includes essential directions to the nurse in dealing with cases of contagious ophthalmia, she is introduced to the operating theatre, and the greater part of the book is taken up by an excellent description of her duties in the preparation of patients for operation, in the operating theatre itself, and during the after-treatment of operation cases. A useful chapter is appended on operations in a private house. In the section on local anæsthesia stress is properly laid on precautions against the roughening of the corneal epithelium that a careless instillation of cocaine causes. Exact directions are given for sterilising dressings, preparing swabs, and the sterilisation of sutures and

[1] Ophthalmic Nursing. By Mary Mason Springgay, Matron of the Western Ophthalmic Hospital, London. With 67 illustrations. London: Methuen and Co. 1925. Pp. 133. 5s.

instruments. The directions for the after-treatment of cataract cases are full and include such points as how the nurse can help in a case of temporary retention of urine, and how best to arrange the bed-clothes for the patient's safety and comfort. Brief descriptions of the principal operations themselves are given.

We believe that this little book supplies what many probationers in eye-wards have desired. "A nurse thoroughly interested in her work," the author writes, "should not automatically use drops or applications simply because they are ordered, but should closely watch their effect on the cases." This is sound doctrine.

THE CONGRESS OF THE ROYAL SANITARY INSTITUTE.

WE reported at some length in our issue of August 1st the proceedings at the Congress of the Royal Sanitary Institute in Edinburgh, and we are glad to learn that its promoters consider it one of the most successful gatherings which the Institute has held. Sir George Newman's address, sketching the future of sanitary administration along the lines of unification and enlargement of sanitary units, coördination of the health services, and increased health education, was supported by the resolution of the Representatives of Sanitary Authorities, on the motion of Lieut.-Colonel F. E. Fremantle, M.P., for a unified health service, and many speakers supported the call for further health education of the public. Edinburgh promotes this spirit of public instruction by placarding her tramway stations with electrically-lighted health notices—"The M.O.H. says 'Spitting causes Disease,'" and the like, while Dr. C. S. Thomson (M.O.H. Deptford) told how his authority had asked him to give lectures on their policies and procedures, which he had found well attended. Expression was often given in the meetings of the Institute to the new outlook of preventive medicine, which aims to-day less at the direct reduction of mortality, and more at the reduction of disabling disease and at securing increased health and exalted resistance for the individual. Future advances, it is becoming felt, will depend largely on individual citizens by whom patient attention must be given to the laws of health.

The next Congress of the Institute will mark the jubilee of the Institute, which was founded in 1876; the meeting will be held in London on July 5th to 10th, 1926, under the presidency of the Duke of Northumberland, the opening meeting taking place in the Guildhall and the sectional meetings at Westminster.

ANIMAL PATHOLOGY AND PHYSIOLOGY.

ORGANISED research into animal diseases has been sleepy in its progress, but there are signs of an awakening movement. During the past year the Ministry of Agriculture's laboratory, the Institute of Animal Pathology at Cambridge, and the Animal Diseases Research Association at Glasgow, have all been actively engaged in the elucidation of puzzling factors in creature maladies. Braxy in sheep has always exacted a heavy toll in some districts and a vaccine is now being employed successfully against it. In 52,000 sheep which were inoculated, the death-rate was only one-quarter of that in untreated sheep. Lamb dysentery is another well-established disease, and persists so obstinately on some farms that the rearing of lambs has had to be given up. Mr. S. H. Gaiger, F.R.C.V.S., considers that the organisms which produce it are all "soil bacteria" and that the disease does not occur in the uterus of the ewe before lambing. This theory has been tested during the 1925 season, and the statistics of the Wellcome Physiological Research Laboratories, Beckenham, seem to indicate that inoculation of pregnant ewes with antigens made from the organisms isolated from cases of the disease has produced a decrease in the lamb fatalities. Scrapie and trembling or louping ill, two distinct diseases of sheep, have also been investigated; but not much progress has been made with them, as both seem to be of obscure nervous origin and transmitted by tainted stock. Grass disease in horses and mammitis in cows and ewes have also received attention, and as time goes on much of the leeway in the domain of research in animal diseases will be gradually overhauled. The Institute of Animal Pathology has carried out a considerable number of routine examinations for veterinary surgeons during the year and is getting together a good library on animal diseases. Mr. W. A. Pool, M.R.C.V.S., late of the Indian Veterinary Service, has joined the research staff as senior research assistant. On the physiological side work has been no less interesting. The Rowett Research Institute, which was established as far back as 1912, near Aberdeen, for the study of animal nutrition, has issued a series of collected papers under the editorship of Dr. J. B. Orr, the director.[1] They cover a great variety of subjects, including the mineral metabolism of pigs and its relation to rickets; the respiratory exchange of goats; the water balance of the body; the nature of scrapie in sheep; the diet appropriate to the intensive raising of chickens; and many other topics of interest and importance. To anyone who likes browsing in a various collection of printed matter—and what genuine student does not?—the volume will make a strong appeal. It will remind him of the great difficulty of trying to keep track of any subject in the flood of present publications. For example, it is of obvious moment that those interested in respiration should consult the papers on the influence of external temperature, work, and pregnancy on the energy exchange of the goat. These, however, have not been published also in one of the physiological magazines, but only in the *Journal of Agricultural Science*, and we have to thank Dr. Orr for the dissemination of the information. We wish him and his colleagues all success in their second volume. Their work has a wider interest than the nutrition of farm animals.

THE NEW MILK AND DAIRIES REGULATIONS.

THE suspended Milk and Dairies (Consolidation) Act, 1915, will come into operation on Sept. 1st next. This Act repeals and re-enacts a number of provisions contained in the Contagious Diseases (Animals) Acts and the Sale of Food and Drugs Acts with regard to milk and dairies. It also reproduces a number of amendments and new provisions which were contained in the Milk and Dairies Act, 1914, the operation of which was deferred. Sections 1 and 2 extend the list of purposes for which Orders may be made under the Contagious Diseases (Animals) Act, 1878, and it is proposed as soon as possible to make an Order under the new powers. Sections 3, 4, and 5 contain provisions similar in effect to those contained in a number of local Acts for stopping the supply of milk likely to cause tuberculosis. Under the new Act the duty of enforcement is placed on the council of the county or county borough in which the cows are kept, and any Order made by them will prohibit the sale of the affected milk in any area. Section 4 requires the medical officer of health of the county or county borough to make the necessary investigations on receipt of a notice from any other medical officer of health. The Tuberculosis Order of 1925 providing for the slaughter of bovine animals affected with certain specified forms of tuberculosis and for the payment of compensation in respect of animals so slaughtered will come into operation on the same day as the Act, and it will be the duty of the local authority discovering the presence in a herd of a tuberculous animal to cause it to be slaughtered or to report the matter to the relevant authority for the appropriate action. Sections 6 and 7 re-enact provisions contained in the Sale of Food and Drugs Act, 1899. Section 8, in conjunction

[1] A limited number of copies is on sale at the Institute. Price 21*s*.

with Section 14, enlarges the power of the local authority to take samples of milk at any time before the milk is delivered to the consumer. An authorised officer of one authority may by notice require the officer of another authority to take samples of milk within his area under the Sale of Food and Drugs Acts, when the sample will be deemed to have been taken within the area of the officer giving the notice. Section 9 amends the provisions of the Sale of Food and Drugs Acts with regard to the warranty defence. Where such a defence is pleaded by a purveyor of milk a sample from a corresponding milking must be taken in the course of transit or delivery to the purveyor, and if the owner of the cows so requests, a further sample must be taken at the dairy at which the cows are kept. The warranty defence will not be available where the sample in respect of which the proceedings are taken is a mixture of milk obtained from more than one seller or consignor. Power is also given to the local authority of the district in which the first sample was taken to take proceedings against the seller or consignor. For the purposes of the new Act the expression "dairy" does not include a shop from which milk is not supplied otherwise than in the properly closed and unopened receptacles in which it was delivered to the shop. The information is set out at length in Circular 612 of the Ministry of Health, which may be obtained from H.M. Stationery Office for 1*d*.

GIOVANNI BATTISTA GRASSI.

ITALY has lost one of her most eminent sons by the death of Prof. Grassi in Rome last May. Born at Rovellasca, province of Como, in 1854, he graduated at Pavia in 1878 and occupied the chair of Comparative Anatomy at Catania until 1895, when he was called to the same position in the University of Rome, where he remained till his death. Pre-eminently a biologist, he was at the same time physician and naturalist. His own view was that the physician would do well to be something more of a naturalist and that the naturalist should not lose sight of the presence of man in his researches and analogies. Grassi's conception of the importance of the intimate connexions which existed between man and the rest of the animal world, connexions which consisted in identity or analogy of function, and in the adaptation of their life in common, led him to the outposts of a new science of which he was one of the founders and to which he gave the name of parasitology. The relations which the lower animals had with man, the specific adaptation in alternate hosts and parasitic cycles, the analogies between parasitic diseases in animals and man, revealed to him their great importance in pathology. Of this trend of study, which subsequently assumed immense and grandiose proportions and on which is founded the greater part of tropical medicine, he was a pioneer. In the preface to his work on Parasitology, which appeared in 1881, he wrote:

> "I remember, when still a student and attending the course of general pathology, being often seized with an intense curiosity to know why the study of disease in every kind of animal was not included, and when I saw the pathologist endeavouring to reproduce experimentally human diseases in frogs and rabbits, I wondered why these and all other animals were not studied when they became diseased naturally. Even a limited application of Darwinism to pathology would suffice to illuminate us with a new and fruitful light."

Thus Grassi guessed at the future which was reserved for bacteriology; indeed, it might be maintained that circumstances alone prevented him becoming an Italian Koch. His scientific energies were directed into many and various fields of research and are a matter of surprise and admiration for all who are acquainted with his work. While still a student he discovered the ova of *Ankylostoma* in the fæces, he investigated the developmental cycle of *Strongyloides stercoralis*, and demonstrated that the dog's flea was the intermediate host of *Dipylidium caninum*, that *Hymenolepis nana* had no intermediate host, while that of *Gigantorhyncus* was a beetle of the genus *Blaps*. From his researches on the *Helminths* were derived the fundamental conceptions which later on led him to the study of malaria and sand-fly fever. On these followed investigations on phylloxera, on the metamorphosis of the murenoids, and the constitution and development of the society of *Termites*, for which he was awarded the Darwin medal of the Royal Society of London, a series of researches any one of which would have secured his name to posterity. Working with Bignani and Bastianelli in 1898 on three species of mosquitoes, he finally concentrated his suspicions on *Anopheles claviger*, to the exclusion of *Culex* and other blood-sucking diptera, and in 1900 published his "Studies of a Zoologist on Malaria," in which Grassi placed on an impregnable foundation the doctrine that malaria cannot exist without *Anopheles*, the truth of which the universal experience of the last 25 years has confirmed. Eight years later the University of Leipzig conferred on him the honorary degree of doctor. To zoologists Grassi's name is very familiar because of his well-known work in association with Calandruccio, which first shed light upon the life-history of the common eel.

Grassi was a man of complex personality owing to certain qualities and even defects of character. Within a small and delicate frame, a wonderful example of the domination of mind over matter, he preserved a nervous and forceful will and a formidable capacity for work. In his laboratory from 7 A.M. till noon and from 1 to 8 P.M., with two or three hours' sleep and at work again before daybreak, such, even at an advanced age, was his constant habit, interrupted frequently by peregrinations into every part of Italy, often in his early days going on foot with his parcel of food in his pocket. He had derived a systematic precision from the schools of Gegenbaur and Bütschli at Heidelberg, and his marriage was a permanent link with Germany, but his genius remained essentially Italian. A man of large and clear ideas, not simply a specialist, but a focus of several specialties, he possessed the rare facility of changing quickly a mental attitude, of taking up a new point of view, of knowing how to free himself from the tyranny of an idea or an a priori conception. Even his prose had a marked personal style; he was not an elegant writer, but amid laboured and involved pages there were to be found terse phrases and sparkling epithets. He was full of strange contrasts, jealous of scientific fame, yet modest withal, and under a rough exterior concealing a simple good nature. He was an idealist in science; his ardour and even passion for work; his exactitude towards himself and others; his courage in exposing himself to dangerous experiments; his renunciation of everything except investigation and study, were fed by this sacred flame. His last wish expressed his philosophy of life: to be buried without public honours in a quiet cemetery in the Roman Campagna among the simple folk who were victims of malaria. This thought is emphasised in an admirable biographical notice by Dr. Massimo Sella,[1] which ends with the valediction: "Italians who are not forgetful will visit Thee in that lonely spot when they desire to strengthen their faith and their will, oh thou Great Italian."

Sir Charles Sherrington, P.R.S., Waynflete Professor of Physiology in the University of Oxford, has been appointed a member of the Medical Research Council from Sept. 30th next, in the vacancy caused by the retirement of Dr. Henry Head under the provisions governing the rotation of membership.

[1] Il Policlinico, Practical Section, July 5th, 1925.

BRITISH MOSQUITO CONTROL INSTITUTE.—The new building of the Institute at Hayling Island will be opened by Sir Ronald Ross on Monday, August 31st, at 4 P.M.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXV.—THE TREATMENT OF FLATULENCE

I.*—GASTRIC FLATULENCE.

FLATULENCE is a term applied to a collection of gas in the stomach or intestines in sufficient quantity to give rise to a sensation of fullness or even pain which is relieved when the gas is expelled. It may conveniently be considered according to its localisation in the stomach or intestines, its genesis being essentially different in the two situations.

Few symptoms are complained of so commonly as *gastric flatulence*, and certainly few are so misunderstood, a state of affairs due in large part to the persistence in medical parlance and literature of that mischievous term, flatulent dyspepsia. It will be well to emphasise at the outset that flatulence with very few exceptions is a symptom resulting from the habit of aerophagy or air swallowing, and that the fermentation theory, apart from rare instances, is a legacy of obsolete conceptions and has little more than historical interest to recommend it. Aerophagy is the cause; flatulence and eructations are its manifestations. A common courtesy amongst Mohammedan races, a gross breach of good manners in Western countries, a frequent associate of all forms of indigestion, and a visceral tic in an individual of neuropathic tendency, the results of aerophagy appear in so many and varied connexions that to maintain the term, flatulent dyspepsia, as a sufficient diagnosis is but to conceal the cause under the cloak of a prominent symptom. Under normal conditions the fundus of the stomach contains a variable quantity of air which is swallowed with the food and the saliva. This fundic air-bubble, so striking a feature of X ray examination, may be increased by: (*a*) deficient absorption of air; (*b*) fermentation or putrefaction of the gastric contents; (*c*) aerophagy or air swallowing.

Deficient Absorption of Air.

Deficient absorption of air from the stomach and intestines is a very rare cause of flatulence, but does occur at times as a result of chronic venous stasis in cirrhosis of the liver and cardiac failure. Treatment consists in the measures usually adopted for the relief of an embarrassed circulation, in the careful regulation of the diet, and in the exhibition of drugs to relieve the discomfort. It should be borne in mind that digitalis may not be well tolerated in cases of heart failure with prominent gastric symptoms and may, indeed, aggravate them. As regards the diet the general principles are: (1) that meals should be small and dry and not more than three in the day; (2) that the intervals between meals should be not less than five hours and that the principal meal should be taken in the middle of the day; (3) that fats and carbohydrates, with the exception of glucose, should be used sparingly. For the immediate relief of distension small doses of the carminative oils are undoubtedly useful, and as shown by Plant[1] act by increasing tone and contractile power. Saundby recommended the following combination:—

℞	Tinct. zingib. fort.	10 ♏
	Olei cinnamomi	1 ♏
	Olei carui	1 ♏
	Olei cajuputi	1 ♏

Dose 2—5 drops.

Oil of turpentine, 10–15 drops on a lump of sugar or in a capsule, is also of value, and a teaspoonful of powdered charcoal after meals is another well-tried remedy.

It should not be forgotten that to the flatulence of cardiac failure may be added the discomforts of aerophagy.

Fermentation and Putrefaction.

It is perhaps excusable for the layman to think that his food "may turn to wind in his stomach" and thus generate an apparently inexhaustible supply of gas, but such a view can no longer receive the serious attention of the medical profession nor be allowed further to obscure important issues. The rate of gastric emptying renders it impossible for flatulence to result from fermentation in the stomach apart from structural narrowing of the pylorus, and even in this condition flatulence is a somewhat rare complaint. The symptom may occur both in benign and cancerous stenosis and the eructated gases may be sour-smelling, putrid, or have the odour of sulphuretted hydrogen. Organic disease should be suspected whenever the eructations are malodorous, though, exceptionally, an odour may be imparted by oral or naso-pharyngeal sepsis. Investigation will speedily show the nature of the case and indicate the treatment proper to the condition, but as a temporary measure of relief and a useful preliminary to surgical procedure, frequent gastric lavage with hot water should be undertaken together with the oral administration of charcoal.

Aerophagy.

Aerophagy or air swallowing is, par excellence, the cause of flatulence. In moderation a feature of normal digestion aerophagy with consequent flatulence becomes abnormal under four main conditions.

1. As an unpleasant habit amongst those who bolt their food, or for other reasons are unable to masticate it sufficiently.

2. As a sequel to excessive salivation or sialorrhœa. This may result from oral or naso-pharyngeal irritation. Ryle[2] produced aerophagy in himself by painting the pharynx with an iodine preparation. Dental caries, pyorrhœa, neglected dentures, tonsillitis, naso-pharyngeal catarrh, and more rarely œsophageal cancer are well-recognised causes.

3. As a symptom in those whose main complaint is indigestion. Flatulence may accompany any type of dyspepsia, whatever its cause, and irrespective of any abnormal conditions of gastric motility and secretion. The mechanism of aerophagy in these cases is described by Hurst[3] as follows: "The patient feels some slight discomfort in the stomach, which he thinks is due to 'wind' and which he hopes he will be able to 'disperse' by eructation; as there is really no excess of gas present, the attempt proves unsuccessful and results in the swallowing of air. After half a dozen attempts have been made, air being swallowed on each occasion, the stomach becomes so distended that an attempt is at last successful." As Bennett[4] points out, the habit is acquired so gradually and unthinkingly that the patient is usually unaware of it until it has been brought to his notice. Although flatulence may occur with dyspepsia from any cause, its association with gall-bladder disease is often so striking as to have some diagnostic value.

In this connexion it may be noted that Bennett[4] has recently drawn attention to the extremely important rôle played by aerophagy as a cause of post-operative acute gastric dilatation.

4. As a psychoneurosis. In patients of neuropathic tendency, as a result of fear, anxiety, or other morbid obsession, aerophagy may occur as a habit and should

* An article on Intestinal Flatulence will appear in this series next week.

[1] Plant: Journal of Pharm. and Exp. Therapeutics, vol. xvi., 311.

[2] Ryle, J. A.: Goulstonian Lectures, THE LANCET, March 28th, 1925.

[3] Hurst, A. F.: Medical Essays, London, 1924.

[4] Bennett, T. Izod: Diseases of Stomach, London, 1925.

be regarded, according to Hurst, as a visceral tic, but it is probable that here, too, the aerophagy had its origin in some gastric discomfort long forgotten. This type of patient presents a familiar appearance; his face is a mirror of his mental and abdominal unrest; he lives on the atmosphere, and his resounding gusty eructations are a source of grave perplexity to himself and mingled astonishment and dismay to his friends and neighbours. In such a one the air does not enter the stomach but is drawn into the œsophagus and immediately and violently expelled. Excessive salivation may be a contributory factor, whilst cardiac symptoms such as palpitations, tachycardia, arrhythmia, and pseudo-angina may occur and make his distress the more acute.

Treatment of Flatulence Due to Aerophagy.

The aims in treatment will be three: (1) To search for and if possible remove the cause. (2) To treat the aerophagy. (3) To treat the flatulence resulting from it.

1. In all cases where the main complaint is of indigestion a careful investigation, by the usual methods, of the upper alimentary tract is essential, for as Bennett[4] says, an organic cause must not remain concealed by such camouflage as flatulent dyspepsia. In a word, the investigation of these cases is that of a dyspeptic and the treatment will vary according to its results.

2. When the symptom is so obtrusive as to demand treatment apart from its underlying cause, it becomes necessary to treat the aerophagy itself. When possible an emphatic assurance as to the absence of gross disease should precede a careful explanation of the mechanism of air swallowing supported, if need be, by a personal demonstration. The patient must be told to suppress all desire to eructate, since no one ever has or ever will be able to bring up wind voluntarily, and any efforts in this direction will but result in the swallowing of air. In the majority of cases explanation on these lines is readily accepted and is usually all that is requisite to break the habit, but in obstinate cases the patient may be advised to hold some small object, such as a cork or cigarette-holder, between the teeth after meals or he may wear a tight band or collar around the neck to act as a constant reminder of his habit. Meals should, in the main, be dry, since less air is swallowed with solid than liquid food, and should be eaten slowly. Excessive salivation when of purely nervous origin should be treated with belladonna, and the bromides may be added for their general sedative effect. In hysterical patients the passage of a large-sized stomach-tube and its maintenance in position for half an hour may be tried, the patient being informed that this procedure will cure the condition. In cases of exceptional severity where the flatulence is no more than a prominent manifestation of a generalised psycho-neurosis complete isolation combined with psycho-therapy is desirable.

3. The drug treatment of gastric flatulence is of quite secondary importance, but for the immediate relief of discomfort the carminatives are valuable and in view of Plant's work their use is rational. They have already been referred to.

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EXTENSION OF HAMPSHIRE COUNTY HOSPITAL.—A comprehensive scheme for the improvement and extension of this hospital, the first instalment of which will cost £55,000, has been set on foot by a county meeting at Winchester. The nurses' home is to be extended at a cost of £26,000; an isolation block and a new out-patients' department are also to be provided. At present 21 nurses are housed in a worn-out army hut; another 27 live in houses outside the hospital, with the consequence that last winter many of them suffered from colds and sore throats. The hospital was founded as long ago as 1736.

Special Articles.

SOME GENERAL REFLECTIONS ON PUBLIC HEALTH ADMINISTRATION.

BY J. H. L. CUMPSTON, M.D. MELB., D.P.H. LOND.,
DIRECTOR-GENERAL OF HEALTH, COMMONWEALTH OF AUSTRALIA.

IV.—THE PROPOSED FAR-EAST CONVENTION.*

THE draft Convention, submitted by Dr. Norman White to the League of Nations as a considered proposal for the regulation of Port Health Organisation and procedure in the Far East, challenges serious examination, because Dr. White has appreciated the difficulties known to exist by all engaged in quarantine activities, and he has dared greatly in departing from the beaten path in his endeavour to find a remedy.

In Australia the conditions in the past have been such, and our present problems are so nearly related to those with which the report deals that we can feel well-disposed to Dr. White's attempts even if we cannot accept his draft Convention. We have been sorry that he could not visit Australia, as we feel we would have benefited from his vigorous outlook, and perhaps our 50 years of evolution in matters of quarantine might have provided precedents of legislative form of some assistance to him in his work. While Australia may not be generally recognised as a country in the Far East, it is only five days steam from Batavia to Darwin, and three days from Banjoewangi to Broome. Also there is continuous traffic down the coast, so that steamers from infected Asiatic countries travel from one Australian port to another within and beyond the incubation period of each of the diseases dated from the infected Asiatic port. Moreover, as Australia is entirely free (except during epidemic invasions) of these diseases, the epidemiology—i.e., the maritime epidemiology—of these diseases can be studied under conditions exceptionally free from complicating factors.

It is therefore perhaps justifiable to apply our experience in an attempt to discuss this draft Convention in the light of the forthcoming official revision of the International Sanitary Convention.

A. The Draft Regarded as a Convention.

Dr. White would probably be the first to admit that his draft requires some re-casting before it could be adopted as a legal document. The various points which seem to call for comment are as follows:—

(*a*) Certain expressions of loose form require reconsideration as to form alone, omitting for the moment any discussion of their significance:—Para. 11: "Measures shall be taken at the port of departure . . . in so far as these are practicable. Para. 18 provides that an inspection is to be made by a health officer immediately prior to the vessel's departure and this examination shall ensure that the vessel is mechanically clean in all parts prior to storing cargo or receiving passengers, and no communication with the shore shall be permitted after the completion of this examination. The paragraph says this, although it does not mean this.

(*b*) A Convention is a binding legal agreement by which every signatory country undertakes to adopt the procedure therein prescribed. The essential nature of a Convention excludes the concept of an ulterior power exercising jurisdiction or compulsion over the individual signatories. Despite this basic principle, the Convention contains internal evidence of the presumption of such a power. Para. 4 provides that ports shall be classified into three categories according as they possess or do not possess "qualified and adequate health staff," "adequate apparatus for fumigation," "suitable quarantine station," and other things "safe" or "adequate." The draft Convention leaves mysteriously undetermined the identity of the authority who shall determine the "adequacy" and so "classify the ports." But the preamble definitely states that "it would be advisable to leave the classification of ports to a central international epidemiological bureau."

Putting aside all questions of the authority controlling this bureau, and the acceptability to various countries of

* Parts I., II., and III. appeared in THE LANCET of July 11th and 25th, and August 1st respectively.

such external determination of fundamental data on which quarantine operations are based, it is essential for a Convention that the nature of the classifying authority and the scope of its functions be specified in the body of the Convention. Para. 16.: It is provided that the measures which shall be taken with regard to small-pox shall follow the procedure in Article 36 (of the proposed modification of the International Sanitary Convention) except that all the measures "shall be compulsory and not optional." The proposed modification provides that "it is recommended that the following measures shall be adopted." Dr. White's suggestion would, if adopted, involve for each country an obligation to carry out the prescribed measures under compulsion, presumably by some authority having power to compel. Dr. White probably means that each country should agree that the measures proposed should be enforced. This criticism is not over-meticulous, as Dr. White submits his text as a legal instrument fully prepared for insertion in the text of the Convention. The phraseology of para. 16 (*d*) would probably require some revision before it could be incorporated (if accepted in principle) in the text of a Convention.

B. *Basic Principles of the Draft Convention.*

The principal considerations which seem to have inspired Dr. White are stated in his preamble to the draft Convention. These are:—

(1) The importance of the human being in relation to plague-transmission is exaggerated in the International Sanitary Convention.

(2) The sanitary state of the port of departure should not be ignored to the extent permissible under the International Sanitary Convention.

(3) The action to be taken on arrival of vessels should be based on the sanitary state of the port of departure rather than on the condition of the vessel, and there is no necessity to classify ships as infected, suspected, and healthy, as is done in the International Sanitary Convention.

It is likely that Dr. White will find considerable agreement with these principles, even amongst those concerned with the drafting and revision of the Paris Convention of 1912. Probably the best way to discuss the practical application of these principles is to begin by considering a vessel newly arrived in port in a country free from the diseases in question. But before doing so, it may be permissible to point out that in all of the discussions of maritime quarantine the lessons of maritime epidemiology have been almost ignored and the facts of terrestrial epidemiology have been assumed to apply. All experience shows that maritime epidemiology has principles and laws of its own, and these laws should be studied much more completely than they have been hitherto.

A vessel on arrival at a clean port presents a problem for immediate solution. There are two elements in the problem: (*a*) Whence does this vessel come; (*b*) what has been, and is, her sanitary condition. Dr. White divides ships into infected or non-infected. An infected ship is one on which a case of one of the diseases in question is present or has occurred during the current voyage. (A curious omission is the lack of specific reference to rodent plague unaccompanied by a "case" of human plague, cf. paras. 16 (*a*) 1 and 3.) A non-infected ship is one which is not or has not been infected in the above sense.

Infected and Non-infected Ships.

Dr. White does not use these terms "infected" and "non-infected," but they are necessary for discussion.

(i.) *The Infected Ship.*—The measures proposed by Dr. White for dealing with the infected ship do not differ essentially from those in the proposed revision of the Paris Convention, except that the "suspected ship" disappears and all vessels which have been infected during the voyage are regarded as infected. As a theoretical principle this commends itself as quite sound; but on examination the Paris Convention provisions commend themselves as equally sound and the distinction between "infected" and "suspected" is a matter of convenient classification. If Dr. White had to deal with a vessel arriving at a port with cases of plague on board he would: (*a*) inspect all on board; (*b*) disembark and isolate the sick and pay special attention to all who had been in contact with the sick; (*c*) disinfect bedding and quarters; (*d*) deratise the ship.

If, on the other hand, the vessel has no case on board and has had no fresh human case for seven days, he could not isolate the sick and he would, on his own showing, not consider it necessary to isolate contacts, but all the other things he would do. This procedure is precisely what the Paris Convention prescribes. The same is true of cholera and yellow fever.

There is, therefore, no force to the proposal that the class of "suspected" ship should disappear. It is artificial, certainly, but it is a convenient way of detailing the difference in measures applied to: (1) a ship which arrives in port with fresh cases, and (2) the ship which has had only an isolated initial case during the voyage. As a practical matter the difference is that between the vessel which has embarked a passenger or member of the crew incubating plague or cholera and the vessel which apparently has a source of infection on board or a spreading infection from the initial case.

(ii.) *The Non-infected Ship.*—Dr. White first proposes (para. 15) that "cognisance" shall be taken of: (*a*) ships from infected or suspected ports; (*b*) infected ships from clean ports; (*c*) ships from clean ports carrying plague-suspicious or cholera-suspicious cargo from infected localities.

From the point of view of daily routine administration this proposal is incomplete. It assumes that Governments will take no cognisance of other vessels. Let us take an actual case. A vessel left San Francisco, which at that time was neither "infected" nor "suspected" with small-pox. It carried some passengers from the interior of the United States incubating small-pox. The vessel called at Honolulu, Suva, Auckland, and arrived at Sydney. The surgeon did not report small-pox. If the Government of Australia had taken no cognisance of that ship the cases of small-pox would never have been known, having been missed at the other ports. It is therefore necessary that a special distorted significance be given to the word "cognisance," or else that some other formula be devised permitting of the routine medical inspection of all oversea vessels arriving. The Paris Convention assumes this, and the Quarantine Act of Australia specifically provides for it and covers all of Dr. White's groups. In the Australian Act all oversea vessels (and in the event of an internal epidemic all vessels from the infected area) are "subject to quarantine"; all "infected" vessels (in Dr. White's sense) are "ordered into quarantine" and then dealt with according to the "suspected" and "infected" procedures of the Paris Convention; and all clean ships from "proclaimed" ports (which are Dr. White's infected and suspected ports) and their cargo or water-tanks are dealt with in accordance with the recognised procedure in each case.

Vessels on Arrival.

Dr. White's introduction leads the reader of his report to expect that he will introduce into his proposed procedure for dealing with vessels on arrival at any port some reduction of completeness depending upon the action taken at a first or second class port of departure. But the only reference to this is found in the preamble: "leaving the port health officer to determine the facilities and immunities that would be accorded vessels that had been treated adequately before departure from ports of the first or second class." Further, there is para. 18, in which it is proposed that a health officer shall inspect all vessels leaving an infected port of the first or second class. Quite apart from the anomalous position that a health officer will not know in any week until the next Saturday night whether his port is infected or not, it is interesting to examine the significance of this classification. The difference between ports of the first and the second classes is the possession by the former of fumigation apparatus and a quarantine station. It is not clear what effect the possession of a quarantine station, with a capacity of 500 passengers and crew, at a port is to have on the risk to overseas countries in view of the present obligation under the Paris Convention on the competent authority to prevent the embarkation of all persons liable to transmit infection.

The pre-occupation of each Government is the protection of its own people from imported disease. A Government in Europe or Australia is concerned only that a vessel approaching its shores shall have left an infected country in a clean condition. This is already covered by Article 12 of the Paris Convention and its achievement is fully possible without a quarantine station; for this purpose, and, in fact, for all the purposes of Dr. White's draft Convention, a port might well be classed as first class without a quarantine station, provided the port of disembarkation were so equipped. Here lies, possibly, the true

purpose of Dr. White's proposal—viz., that some form of inducement is necessary to encourage all important ports in the Far East to provide themselves with a quarantine station and other essential equipment. Nobody with any experience will do other than applaud this purpose, but it is brought into the Convention in an illogical and resultless manner. Actually, so far as one can read the report, the design is that the "central epidemiological bureau" shall be in a position to encourage by moral pressure the establishment of such stations. That is a larger issue with many implications direct and indirect. It is sufficient to say here that such a design cannot be introduced in a subtle and indirect way, but must, if adopted, find clear and definite expression in legal form in the text of the Convention.

Vessels on Departure.

A very important practical provision, which might with advantage be incorporated in the International Sanitary Convention, is found, but in very tentative form, in para. 21 of Dr. White's draft Convention. This article reads as follows:—

"With regard to other communicable diseases not coming within the scope of articles in this Section, each signatory Government shall endeavour to apply to departing vessels such measures as may be requested by the Government of the country of the port of destination."

To a certain extent this practice is recognised in the Australian Quarantine Act and Regulations, at least to the extent that exemption from deratisation measures is permitted if these have been effectively carried out according to prescribed means at an overseas port of departure. The same provision has been utilised in connexion with cholera, if the water-supply at an overseas port has been from a reliable source. In Dr. White's report, however, the position is left unsatisfactory in that the same basis of action is dealt with partly by Article 18, which provides for inspection by a medical officer at the port of departure, and Article 16 in which the reduced measures of protection at the port of arrival are based upon action of the kind now contemplated at the port of departure.

The Dutch Government has submitted to the Health Committee of the League of Nations a similar suggestion. In Holland the Government is authorised to exempt vessels going from one port from any health formalities before entering another port provided all necessary measures of disinfection, deratisation, &c., had been taken at the first port; the Dutch Government think that, from an international point of view, it would be highly desirable to extend the scope of this measure in the interests of commerce. This proposal was the subject of some discussion, and it was decided to entrust to a Commission the task of studying the practical measures necessary to facilitate the conclusion of agreements between Governments, aiming at the establishment of this procedure on a standard of scientific basis. It would probably be found that there is uniform agreement as to this principle of bringing into operation the protective measures against the transmission of disease at the point where the risk actually exists. It is merely the expression in another administrative field of the military principle that the best defence line is the enemy's frontier.

When bubonic plague occurred in Brisbane and Sydney, 1922–23, the immunity of the other portions of the Commonwealth from plague was due entirely to the fact that such measures were taken as to ensure the departure from the infected areas in an entirely rat-free condition of every single article of merchandise.

Progress Necessarily Slow.

Undoubtedly international sanitary measures will be improved from their present basis in proportion as measures of sanitary precaution can be taken in regard to traffic at the time of departure from the infected country, and each modification of the Sanitary Convention aiming at securing this result, step by step, would be hailed as an improvement. The prospects which we now have of securing the inclusion of a logically considered scheme of action in this regard in the next revision of the text of the Sanitary Convention represent one of the greatest advances which has been made during the evolution of the sanitary conventions. It is felt, however, that tangible results in this direction will be slow to materialise, as each port, in order to secure recognition, will need first to provide proper equipment, and second, to establish the confidence of other countries that the equipment is reliable.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(*Continued from p. 226.*)

THE COUNCIL OF BRITISH OPHTHALMOLOGISTS.

(App. LXIII. and Q. 17772–17934.)

EVIDENCE on behalf of this Council was submitted by the following medical men: Mr. E. Treacher Collins, Mr. J. Herbert Fisher, and Mr. S. Mayou.

The Council is strongly of opinion that the examination of the eyes should be carried out by qualified medical practitioners, and supported its view by drawing attention to the report of the Departmental Committee on the Causes and Prevention of Blindness, in which the importance of the provision of adequate facilities for ophthalmic treatment is emphasised, and a definite recommendation made that "all persons with defective vision should first consult a competent medical practitioner."

A subcommittee of the Council jointly with the British Medical Association have made recommendations which include the following:—

1. That the so-called optical benefit should be designated ophthalmic benefit. Ophthalmic benefit would include examination and prescription for spectacles, if required, and such operative treatment and advice as can be given at a single consultation at the consulting room. A report, when necessary, would be given for the guidance of the private practitioner.
2. That insured members of every Approved Society should in any case of ocular disorder or visual defect apply to their insurance practitioner.
3. If the insurance practitioner considered the case one requiring special advice or treatment he would give the applicant a certificate, enabling him to consult a specialist at a reduced fee.
4. A list of ophthalmic medical practitioners qualified and willing to see members of Approved Societies at a consultation fee of £1 1*s.* should be prepared.

The Council considers that no course of training short of that required for full medical qualification can produce the skill and judgment necessary for the examination and treatment of the eyes. It is well known that changes in the refraction of the eye are often produced in the early stages of serious eye disease. In many such cases an optician may be successful in raising the acuteness of the vision to a normal standard, but he would almost inevitably fail to recognise the disease which is the cause of the refractive error. In fact, disease very serious to the eye, or threatening even life, may occur in an eye with perfect acuity of central vision.

Without the use of drugs to dilate the pupil or paralyse the focusing muscle, in many cases the optician cannot measure accurately the error of refraction, or be in a position to identify the cases which demand medical advice and treatment. If he were allowed to use such drugs he would become an even greater danger to the community by reason of serious disease which he in his ignorance might produce. The ophthalmic surgeon must have an adequate knowledge of diseases of the brain and

* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

central nervous system, of the blood-vessels and vascular system, of the kidneys, of the nose and its accessory sinuses, of the various ductless glands, &c. In fact, there is no branch of medicine which is not in close relationship with this special domain, nor is there any specialty in which a general medical knowledge is of greater importance.

On the question of the competence of the general practitioner to make an effective examination and diagnosis Mr. Fisher said :—

(Q. 17779.) Our idea was, I think, that the panel practitioner would be a cog in the wheel of administration of ophthalmic benefits, probably not actually doing himself any large proportion of the ophthalmic benefit, but here and there, there might be a panel practitioner who might have sufficient special knowledge to deal, at any rate, with some branches of ophthalmic cases. That would not be very frequent.

This led later to the following question :—

(Q. 17864.) Does it not simply resolve itself into this, that in a very large proportion of cases the general medical practitioner would be bound to say, and quite honestly bound to say : "This is beyond me altogether ; go to an ophthalmic surgeon" ; and that would involve a fee of a guinea in every case ?—In a large majority of cases, certainly.

As to there being a sufficient supply of specially trained practitioners for a service for the whole insured population, the witnesses stated that a list had been drawn up jointly with the British Medical Association, and there was a sufficient supply for present needs and no doubt that the number would rapidly increase.

The witnesses agreed that the training of the general practitioner in eye work was quite inadequate, and the Council has repeatedly made representations on the subject to the General Medical Council. The Council was in possession of evidence of the danger of a patient going straight to the optician, the mistakes including overlooked disease, patients unnecessarily alarmed about their condition, and unnecessary glasses frequently supplied.

With regard to clinics, the witnesses said that if any clinic system were to be established it would have to be independent of the present eye hospitals, where it would be physically impossible to get through the cases in the accommodation available, but, in fact, the Council were opposed to clinics generally and regarded them as impracticable for the treatment of the insured population.

THE OPHTHALMIC BENEFIT COMMITTEE.

(App. LXIV. and Q. 17935–18029.)

This evidence was given by the following medical men : Mr. H. L. Eason, Mr. G. H. Pooley, and Dr. Charles F. Harford.

The Ophthalmic Benefit Committee represents the interests of ophthalmic medical practitioners who are willing to take part in an Ophthalmic Medical Service. The Committee is in hearty agreement with the evidence submitted by the Council of British Ophthalmologists and the British Medical Association. The Ophthalmic Benefit Committee came into existence about a year ago. Its membership is approximately 280, excluding the North of England, which has its own society, represented on the Committee by Mr. Pooley.

The witnesses confirmed the evidence given above as to the dangers arising from going direct to the optician, and said that the cases which they could produce in evidence involved both trained and unqualified opticians.

(Q. 17953.) Will you give us briefly some indication of the nature of the cases ?—The common disease is glaucoma which, as you know, is one of the serious diseases which may affect the eye. Early cataract is another. Disease of the retina associated with some general medical disease such as renal disease and Bright's disease, which are apparent to any skilled observer and are only local indications of general disease.

They objected strongly to some of the advertisements of opticians, by which they considered that the public were misled. The optician might examine the inside of the eye through a lens, but without medical training he could not appreciate the importance of what he saw.

(Q. 17972.) By looking at the inside of the eye you have the opportunity of seeing a portion of the human body during life under a high magnified power. Arterial disease, nervous disease, many other diseases, can be seen in the eye before being recognised elsewhere.

Interesting evidence was given with regard to cases of hæmorrhage in the retina productive of headache and yet easily overlooked in a mere testing for glasses. It was suggested by a member of the Commission that this appeared to prove too much and to lead to the conclusion that people should go to the ophthalmic surgeon at intervals. The witnesses agreed that these cases would not necessarily be discovered by providing that persons should go for correction of error of vision to an ophthalmic surgeon rather than to an optician. Mr. Harford explained the matter as follows :—

(Q. 17980.) People are being persuaded by these specious advertisements that if they have a headache, if there is discomfort in various ways, they should not go to their doctor, but to an optician. If they had gone to their doctor he would have been able to throw more light on the other symptoms. People seldom have hæmorrhage of the retina without some other symptom, and, therefore, all things have to be discovered, and the right person to do this is the patient's own medical practitioner who is dissatisfied with their state of health, and feels that they ought to have further advice, which would mean an examination by an ophthalmic surgeon.

With regard to clinics, the grave defect was felt to be that it was a contract system whereby so many persons had to be seen in an afternoon whether the cases were important or not ; the Committee thought that specialists would never be persuaded to take up clinic treatment under the Insurance Acts, though in reply to later questions bearing on the possibility of an improved and better organised system of clinics, Mr. Eason said :—

(Q. 18029.) In addressing ourselves to the fundamental question, the question of clinic or no clinic is to us of secondary importance compared to the main point, which is giving to the insured person when he goes to the clinic or anywhere else the best possible attention. If the first point is accepted then we can work out the machinery.

CHEMISTS' EVIDENCE.

(App. LXV and Q. 18030–18265.)

Mr. A. R. Melhuish and Mr. G. A. Mallinson gave evidence on behalf of the Retail Pharmacists' Union, which was founded to carry on, in addition to other activities, certain work, formerly undertaken by the Pharmaceutical Society of Great Britain, which, as the result of a test case in the High Court, was deemed to be outside the Society's charter. The membership of the Union is limited to those carrying on retail businesses as chemists, and it represents the whole of the panel chemists of the country through the Pharmaceutical Committees, all of which acknowledge the Union as the representative body. Scotland has its own separate organisation and the evidence related to conditions in England and Wales.

Under the National Health Insurance Acts prescribing is separated from dispensing excepting in many rural areas where the doctor necessarily does both. The chemist has no control over the supply, it being his business to meet the requirements of the doctor's prescriptions.

The arrangements under the National Health Insurance Act for the supply of medicines through the chemists are, it was stated, as complete as any which exist in private practice, and are a vast improvement on the conditions previously existing under the "club" practice system. The insured person can now have exactly the same medicines as the most wealthy patient can purchase. He has the right to the same range and quality of drugs and medicines. The doctor is the deciding factor, and whatever he orders the patient will get from the panel chemist.

The arrangements work well and there is a supply of chemists adequate to maintain a service for the dependants of insured persons. It was suggested that the separation of prescribing from dispensing is a natural result of the developments in medical science. The doctor has now no time to spare to make himself a specialist in pharmacy and dispensing. An advantage upon which too much stress cannot be laid is that the doctor may prescribe during his rounds and the patient can get the medicine without waiting for the doctor to return home, because the chemist gives a continuous all-day service. Further, the fact that a patient can be dismissed immediately his prescription has been written lessens the congestion in doctors' waiting-rooms. The hospital practice of using stock mixtures is not viewed favourably by chemists, who maintain that the tendency should be in the other direction, towards the higher-class medical practice of writing individual prescriptions.

With regard to delays that may occasionally arise in making up prescriptions, it was thought that there might be closer coöperation between Panel and Pharmaceutical Committees in regard to surgery hours and the hours of closing chemists' shops.

As to the checking of medicines supplied by chemists, the witnesses said that the machinery of the Food and Drugs Act had not proved fair or effective. The chemists were themselves desirous of adequate tests being made and of proper disciplinary action, and the Retail Pharmacists' Union had submitted a scheme to the Ministry of Health. In general the scheme provides for medicines being made up by the chemists on prescriptions specially written by the doctors and presented by an agent of the Insurance Committee, who proceeds to divide the medicine in the presence of the chemist and takes one-half away to be analysed. The doctor does not write these special prescriptions because he is under contract to do so, but because it assists in promoting the efficiency of the service. For what they described as manipulative error, the witnesses thought that an all round 5 per cent. margin should be allowed.

On the subject of advice asked for by customers, the following questions were answered :—

(Q. 18205–8.) You mentioned that people come to you for general advice. I suppose about a cut finger and things of that sort ?—Yes. And you advise them ?—Yes. In a certain sense you act as medical advisers in a small way ? Hardly that. You act as a layman with a knowledge of medicine ?—It is what you would do in your own family.

It was claimed in the course of examination that as between chemist and client there was something of the same desirable personal relationship which counts for so much as between doctor and patient and that in any case it was clear that a person thought much more of medicine supplied by the chemist than he did of supplies from a dispensary or the out-patient department of a hospital.

DRUG STORE PROPRIETORS.

(App. LXVI. and Q. 18266–18436.)

This evidence, given by Mr. W. Huntrods and Mr. A. Hutchison, contains statements of a rather sweeping character suggesting unnecessary services rendered by doctors to insured persons and fraudulent practices on the part of chemists, such as the alteration of prescriptions for their pecuniary benefit, and the supplying of short measures and inferior articles—statements which the witnesses had not the material necessary to support in oral examination.

Other statements were as follows: Persons earning more than £100 per annum should not be compelled to be insured because they are generally of a higher education and social standing than the average working man. . . . The administration of medical benefit should be simplified by establishing State medical officers and dispensaries. . . . There is not the slightest doubt that the National Health Insurance Act has created a neurotic drug-loving nation. . . . Careful consideration should be given to (1) repeal of the Act; (2) the taking of a plebiscite; (3) making the Act voluntary.

BRITISH PHARMACEUTICAL CONFERENCE.

GLASGOW, JULY 27TH–31ST.

THE sixty-second annual meeting of the British Pharmaceutical Conference was held at Glasgow during the last week in July. Mr. Edmund White, B.Sc., F.I.C., the chairman, in his address, dealt with recent and coming events in British Pharmacy.

Chairman's Address.

Mr. White began by referring to the progress that has been made with the scheme for establishing a laboratory for the biological examination and standardisation of therapeutic substances; rooms in the Pharmaceutical Society's buildings had been allocated for the laboratories, and with the passing into law of the Therapeutic Substances Bill, the Society will be able to meet the demand for an institution which will be competent to examine and issue certificates for therapeutic substances requiring standardisation by biological and physiological methods. There is no doubt that such standards will receive extended recognition as and when facilities are provided for their establishment and they are shown to be reliable indications of value and potency. Mr. White next referred to the recent remarkable growth in the membership of the Pharmaceutical Society and then to the prominent part the Society is now taking in international pharmacy, and the steps lately taken towards the advancement of pharmaceutical education and research at home. In this latter connexion he mentioned the establishment this year of the degree of Bachelor of Pharmacy, instituted by London University under conditions which will enable the Society to accept it as a registrable qualification, and the raising of the standard of the curriculum and examination for the qualification of pharmaceutical chemists. The fact that London University has recognised pharmacy as a branch of learning necessitating the provision for facilities for the highest form of education and research will do much to place pharmacy in its proper relation to the other sciences. Finally, Mr. White, after referring to the difficulties in the way of the international unification of pharmaceutical methods, said he believed that a serious effort to unify pharmacy in the English-speaking communities would yield encouraging results at once: "You have only to compare the British Pharmaceutical Codex with the United States Pharmacopœia to see how British and American practice runs on similar lines, and the time has now arrived when our great overseas Dominions, such as Canada, Australia, New Zealand, and South Africa, should be invited to take a more active share in moulding the destinies of pharmaceutical practice as reflected in our Imperial and National Pharmacopœias."

Scientific Papers.

In the Science Section 19 papers were contributed, some of them being of a high standard and bearing evidence of patient work. In a paper on the Identification of Alkaloids, W. M. Cumming, D.Sc., F.I.C., and D. Brown, B.Sc., described how, using potassium ferro-cyanide as a reagent, the alkaloidal salts in definite crystalline form may be obtained from neutral, acid, and alcoholic solutions. The paper was copiously illustrated by lantern-slides, showing the characteristic appearances of the crystallised salts. H. Finnemore, B.Sc., F.I.C., read a paper on West Australian Sandalwood Oil, in which he suggested that this oil may prove to be as efficacious medicinally as the East Indian oil. There seems to be little, if any, reason why the B.P. specification for sandalwood oil should not be made to include the West Australian product. A. J. Jones gave the results of his investigation of the question of the

variability of the density of bismuth carbonate; incidentally he remarked that it was a mistake to suppose that a light carbonate always suspended or diffused better than a heavy one. A typical pharmaceutical paper was contributed by F. J. Dyer and R. Melville on Phosphorus Pill; the official formula produces a pill that is too soft for general practice, and the authors, while presenting a new formula, suggested that the administration of free phosphorus in pill form should be replaced by some other method, as, for instance, phosphorated oil in capsules. A communication from the Pharmaceutical Research Laboratory of the Pharmaceutical Society was made by T. E. Wallis, B.Sc., F.I.C., and Ellinor J. Mowat, on true and false santonicas; from time to time there appear on the market specimens of santonica which closely resemble the genuine drug in external appearance, but which contain no santonin. The examination of a large number of species of *Artemisia* belonging to the section *Seriphidium* enabled the authors to select those features which are useful in distinguishing between nearly related species and to formulate characters by which the flower heads of genuine santonica of commerce can be identified with certainty. Another communication from the same laboratory was made by G. R. A. Short on the structure of coscinium; these two papers illustrated the valuable research work which is being done in the Pharmaceutical Society's laboratories. A paper of more direct interest to practising pharmacists was contributed by G. T. Elsdon, B.Sc., F.I.C., on the testing of insurance dispensing; he made observation on 309 mixtures, dispensed under the Insurance Act, which he had examined and showed that in recent years adulteration was almost entirely absent; incidentally, he mentioned that it was now possible to obtain machine-made bottles having an accuracy of about 2 per cent., in all cases. Bernard F. Howard, F.I.C., and Oliver Chick drew attention to two minor discrepancies in the quinine monographs of the British Pharmaceutical Codex; their comments will be of assistance to the Revision Committee. In a paper on the estimation of small amounts of reducing sugars in urine F. Wokes, B.Sc., drew attention to the importance of carrying out accurate estimations of small amounts of reducing sugar in urine and suggested a micro-method for use by pharmacists; he also showed how to make allowance for variations in urine due to diet and the time of collection of samples.

Among other papers contributed were the following: A Chemical Examination of the Oleo-Resin of Indian Valerian Root, by K. Bullock, M.Sc.; the Identification by Chemical Methods of Drugs Containing Tannins, by A. H. Ware; Cochineal: the Utility of Assay Methods in the Estimation of Comparative Colour Values, by A. O. Bentley and S. Meakin; Note on Morphine Hydrate, by D. B. Dott; the Picrates of the Opium Alkaloids, by C. W. Maplethorpe and N. Evers, B.Sc., F.I.C.; the Colorimetric Estimation of Benzoic Acid in Cordials, by A. J. Jones; A Note on the Official Process for Assaying Galenicals of Hydrastis, by H. B. Mackie and H. A Cleary, B.Sc.; A Note on Oleated Mercury, by F. J. Dyer and K. M. Metcalfe; the Vitamin Content of Cortex Limonis B.P., by S. G. Willimott, Ph.D., B.Sc., and F. Wokes, B.Sc.

At a meeting of delegates from the Pharmaceutical Society's branches, held in connexion with the Conference, under the chairmanship of Mr. P. F. Rowsell, President of the Society, a paper was read by Mr. F. Pilkington Sargeant entitled An Historical Survey of the Charters and Acts of Parliament Governing the Society's Activities leading up to the Present-day Position. Mr. J. Keall read a paper on the Dangerous Drugs Act. A meeting of the newly-formed League of Ex-Service Pharmacists was also held under the chairmanship of Major E. S. Peek. Papers were contributed on the Development of Pharmaceutical Service in the Army, by Captain Hill, and on the Use of Antiseptics in War, by Mr. F. Wokes.

CANADA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Montreal Vital Statistics: A New Milk By-law.

Dr. Boucher, Director of the Health Department of Montreal, has issued recently the annual report of his department for 1924, in which the vital statistics of Montreal are discussed. These show that there has been, compared with 1923, a decrease in the death-rate (14·87 as against 15·67), an increase in the birth-rate (32·75 as against 31·94), and a slight falling off in the number of marriages per 1000 (9·24 as against 9·49). The figures are calculated on the basis of a population estimated at 655,800. The average of the surplus of births over deaths for the past ten years was 9·749, showing consequently an increase of 1999 over the average of the past ten years. Under the head of infant mortality the report states that 3151 deaths of children under one year were registered in 1924, as against 3057 in 1923, or an increase of 94. The infant mortality death-rate for 1924 is the lowest observed in Montreal since the organisation of the bureau of statistics, but Dr. Boucher finds a decrease of 2·4 per 1000 births not sufficient, and believes it would be improved by reliable milk by-laws.

A by-law has been drawn up by Dr. Boucher, and was prepared to the end that a more effective hygienic control over the condition of milk might be imposed by employing educative measures towards the producer and retailer. The by-law embodies the rules for producing a clean, healthy milk, and keeping, transporting, and handling it until it reaches the consumer. In those cities, according to Dr. Boucher, where pasteurisation has been adopted, it has resulted in the appreciable diminution of deaths among nurslings. New York is quoted, where the ravages of tuberculosis have decreased amongst children under 15 years through pasteurisation by 53 per cent., when the figures for 1924 are compared with those 25 years ago. The new by-law allows the sale of natural and sterilised, as well as pasteurised, milk, so that the public may buy what they desire. Pasteurisation seems to be in high favour in the cities both of Canada and the United States, but the new milk by-law, which it was anticipated would pass without objection, has been held up temporarily, and at the time of writing has not been passed.

Inadequate Accommodation in the Hospitals of Montreal.

Superintendents of the Montreal institutions for treating the sick and injured, English and French, find the overcrowded condition of their institutions serious. Major A. K. Haywood, superintendent of the Montreal General Hospital, pointed out recently that Montreal requires 1500 more beds for general cases. In his opinion, a city with adequate hospital facilities should have 5 to 7 beds per 1000 inhabitants, whereas Montreal has only 3 to 5. But he considers the reason that Montreal cannot build additional wards is not so much because of the capital expenditure as because of the cost of maintaining the beds when accommodation has been found. Every public ward, he went on to say, means a loss to the hospital. With the present large deficits facing the boards of management, these cannot consider the addition of more beds until assurance is given as to the financing of them. Dr. L. A. Lessard, secretary of the Notre Dame Hospital, has stated that every day his hospital is compelled to turn away emergency cases. The situation is better now than it was and than it will be in the winter, but is serious even at this season.

A Proposed Jewish Hospital in Montreal.

Dr. N. Vincent, President of the Montreal Clinical Society, at a meeting of the organising committee of a proposed Jewish and General Hospital in Montreal,

stated that there is accommodation for only 1 out of 10 cases which require hospital treatment. He pointed out that there were English Protestant hospitals, French Catholic hospitals, and he hoped that there would be a Jewish hospital, where the particular tenets of the Jewish religion as to diet could receive due consideration. Jewish graduates would also have a better opportunity of learning clinical work, though the proposed hospital would not be entirely for Jews, of whom there are between 60,000 and 70,000 in Montreal. Dr. A. Bercovitch, secretary of the organising committee, announced that the medical men interested in the project had promised $20,000 towards its cost. The erection of the hospital as proposed would cost about $500,000, and accommodate 150 beds. A resolution was passed unanimously voicing the need of the institution.

Fellowships at McGill University.

Awards of four Cooper Research Fellowships in experimental medicine at McGill University have been announced recently. The Cooper Research Fellows are: Dr. A. R. Elvidge, who held a Fellowship last year and is reappointed for another year; Dr. G. Garvin Miller, now of the Ford Hospital, Detroit; Dr. G. S. Mills, Montreal General Hospital; and Dr. J. C. Clelland, of the Royal Victoria Hospital, Montreal, who are appointed to Fellowships for the first time. The Cooper Research Fellowships take their name from the late James Cooper, of Montreal, who died in 1912, leaving in his will a fund of $50,000 to promote research and to improve teaching.

Treatment of Insane in Canada.

A radical change in the methods of treatment of the insane, or the presumably insane, is to be introduced into the Province of Quebec. It is the establishment of a psychiatric hospital, in which the classification of the mentally disordered or abnormal will be facilitated. In such an observation hospital cases will be studied in order to decide what kind of treatment is required in cases which are considered curable. Of course the incurables will be transferred to the usual insane institutions. In Great Britain this mode of treatment is in use to some extent, and in the United States is employed more widely. The psychiatric hospital in the Province of Quebec, the construction of which is in progress, will provide accommodation for 250 patients.

Motor-car Accidents in the Province of Quebec.

In 1924, in the Province of Quebec, motor-car accidents were responsible for 139 deaths. The total number of deaths for 1923 was 117. Thus 1924 shows an increase of 19 per cent. over 1923. It is believed that to the carelessness of motor-car drivers the majority of accidents were due, especially to contempt of traffic rules.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Influence of Factory Work on Parturition.

Dr. Hirsch, of Berlin, has conducted a valuable piece of research concerning the effects of factory work on pregnancy, birth, and the post-partum period. Most of his investigations were carried out on women workers in textile factories, of whom there are in Germany more than 500,000. On an average 40 per cent. are married, and among these the total annual number of pregnancies is about 10,000. It is interesting to learn that the ratio of miscarriages occurring in women working at spinning machines and at looms, compared to the incidence among women not engaged in factory work, is as 16 to 1 and 6 to 1 respectively, whilst the number of still-births in the textile districts is double the average for the whole country. Only 30 per cent. of the births among female textile factory workers were normal. This is due, Dr. Hirsch holds, to the fact that narrowness of the pelvis is very frequent among textile workers, because women begin factory work at a time when the body is still growing. The incidence percentage of narrow pelves and of pathological births increases in direct ratio to the youth of the worker. Female textile workers are worn out at the age of 40, when the male worker is still in possession of his strength. The Berlin Medical Society, before which Dr. Hirsch read a paper on the subject, resolved to direct a petition to Parliament to the effect that women should not be allowed to work more than six hours per day in the third and fourth month of pregnancy and four hours in the fifth and sixth month, and should not work at all during the last three months; that seats should be provided for pregnant women whose work requires long periods of standing or walking, and extra rooms where they might repose in cases of necessity; that the institution of canteens which already exist in many of the larger factories should be made compulsory; that medical women should be appointed as factory inspectors for the especial care of pregnant women; that troubles connected with pregnancy should be regarded as illnesses under the Workmen's Insurance Act; that sick-clubs therefore should be compelled to provide in cases of pregnancy and normal confinements medical attendance, and sick-pay similar to the provisions made in the case of an illness.

Amendment of the Workmen's Insurance Acts.

By a recent Act the law concerning the insurance of workmen against accidents has been amended to the effect that certain trade diseases now rank as accidents. By the terms of the Act a medical man attending a workman who is suffering from a disease due to his trade is obliged to notify the case to the local insurance office (*Versicherungs-Amt*) which has to inquire into the matter and to provide for the indemnification of the workman according to the provisions of the accidents insurance law. The following diseases are to come under the provisions of the Act: poisoning by lead, phosphorus, mercury, arsenic and their compounds, benzol and its congeners; further, chimney-sweeps' cancer, tar cancer, paraffin cancer, pitch cancer, cancer caused by anthracite and similar substances; glass makers' cataract, diseases caused by Rontgen rays, ankylostomiasis in miners, and pulmonary diseases of metal miners in Saxony.

Lectures on Puberty.

A series of lectures on puberty were delivered before the Berlin Pædiatric Society recently. Prof. Spranger first dealt with the subject from the psychological standpoint; he pointed out that other circumstances besides the sexual symptoms characterised puberty; such general symptoms were the beginning of consciousness of the ego, the awakening of phantasy, leading often to poetical production. The fluctuations between predilections of quite different kinds—e.g., music and sports—were common. He differentiated sexuality from eroticism. Early sexual enlightenment, he held, was advisable when it answered questions which are in the foreground of adolescent interest, but it was altogether doubtful whether enlightenment was able to give control of the sexual impulse. Young people desire to be understood, and he who understands a youth may easily influence him, whilst youths are antipathic to people who do not understand them. Dr. Aron spoke on puberty as a physiological process, and expressed his conclusion that puberty depended on the glands of internal secretion which contribute to the growth of the body. The hormones of the generative glands were active in the last stage of the condition. He drew attention to the fact that in townsfolk puberty developed earlier than in country people, and earlier in the well-to-do class than in the proletariat. The more slowly puberty developed, he said, the more natural it was. The principal cause of early puberty in town people was due, in his opinion, to the fact that they had less

physical exercise than country people. Muscular activity, which is a greater factor in the life of country children, stimulated growth and strengthened the heart and the lungs. A future generation would be able to state whether the spread of sports among the town youths had had an influence on the age of onset of puberty, and had rendered the development of town people more like that of country people.

Death of Prof. Bernard Naunyn.

Prof. Bernard Naunyn, one of the most celebrated German physicians and teachers of clinical medicine, died recently in Baden-Baden at the advanced age of 86. He was born in Berlin, his father being at one time mayor of that city. He studied medicine in Bonn and in Berlin, where he graduated in 1862. He first made researches in anatomy, but soon became an assistant to the late Prof. Frederichs, who was at that time one of the most distinguished clinicians of the University of Berlin. Naunyn's work on jaundice and on the theory of fever led to his appointment as professor of medicine at the University of Dorpat. In 1871 he held a similar appointment at Berne, and in the following year at Königsberg. In 1888 he succeeded Prof. Kussmaul at the University of Strassburg, and he remained there until 1904. On retiring from active work he lived in Baden-Baden, and gave his services as consultant when necessity demanded to the international public of that health resort. During the war, in spite of his advanced age, he acted as consulting physician to a military hospital at Baden. His numerous published works concerned localisation of cerebral diseases, dealing particularly with aphasia and cerebral pressure, also diseases of the gall-bladder and diabetes. Together with Prof. Klebs and Prof. Schmiedeberg he founded in 1873 the *Archiv für Experimentelle Pathologie und Pharmakologie*, and with the late professor of surgery, Dr. Mikulicz, the *Mitteilungen aus den Grenzgebieten zwischen Medicin und Chirurgie*. He also published three essays on general medical questions, and latterly wrote his memoirs. Among his well-known assistants were Profs. Minkowski, Eichhorst, and Weintraud. He was an excellent teacher, and was much esteemed by his patients and his pupils.

An Epidemic of Enteric Fever.

In Anklam, Pomerania, a town of 15,000 inhabitants, a severe epidemic of enteric fever has broken out. The number of cases at present is 200, of which eight have proved fatal. The patients have been conveyed partly to the university hospital of Griefswald, which is in the neighbourhood, and partly to the local infirmary where a number of provisional barracks have been erected; 3000 of the inhabitants have undergone preventive inoculation. It has been possible to prevent the spread of the disease to the neighbourhood, a very important fact, as Anklam is situated near the favourite Baltic seaside resorts, which are at present crowded with people from Berlin and other cities. The Government Health Department have sent Prof. Lanz to the spot where, in conjunction with the professor of clinical medicine and the director of the Hygienic Institute of Greifswald University, he has examined the cause of the epidemic. They have ascertained that the epidemic started from a dairy near the town, where the majority of the patients had bought their milk.

CHELSEA HOSPITAL FOR WOMEN.—This hospital has opened a floor with 18 beds for the accommodation of patients able to pay a weekly fee of £5 5s. Very moderate fees will be charged for operations. The diseases admissible, as in the rest of the hospital, are those peculiar to women. The success obtained by the hospital in this work is shown by the available figures. H.M. The Queen, the Patron, in paying recently a visit to the new nurses' home in connexion with the institution, expressed her gratification at the extension of the activities of the hospital, whose benefits are now being brought within the reach of a class of patient for whom there is at present insufficient accommodation.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the health statistics for 1924 of a group of districts situated on the fringe of the metropolis:—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Willesden U.D. .	171,161	16·6	10·4	1·04	1·2	2·2	32	73	1·4
Tottenham U.D.	153,100	18·6	10·2	0·99	1·1	2·0	32	62	2·4
Ilford U.D. ..	88,791	16·2	9·9	0·73	1·3	1·9	19	43	0·7
Edmonton U.D.	70,450	19·7	10·1	1·05	1·1	2·2	—	56	5·1
Wimbledon B...	58,090	14·0	11·1	0·76	1·5	2·2	37	72	3·7
Hendon U.D. ..	57,530	16·2	9·2	0·71	1·4	1·4	22	43	2·1
Finchley U.D...	47,810	15·9	9·2	0·73	1·0	1·8	29	50	3·9

U.D. = Urban district. B. = Borough. — = Information not included in report.

Willesden.

Dr. George F. Buchan reports that ten cases of small-pox occurred in Willesden in 1924, all in one house. The type varied from mild small-pox to the most virulent haemorrhagic form, and three of the ten cases proved fatal. The infector of the first of the ten cases could not be traced. Supervision of the contacts proved effective and there was no spread of the disease in Willesden. Two of the contacts under observation developed small-pox, one in the Midlands and one in London, and were at once isolated on the appearance of symptoms without further spread of the disease. Out of 12 notified cases of puerperal fever, nine of the births were attended by a doctor, one took place before the arrival of the doctor, one occurred in a London hospital, and the twelfth was attended by a midwife. Twenty-nine cases of ophthalmia neonatorum were notified. In 19 the birth was attended by a doctor, in nine by a midwife, and the remaining case was born in a hospital. Vision was unimpaired in 25 cases; in one case the eye was permanently injured and in two cases the babies died from other causes, and one case was under treatment at the end of the year. The percentage of babies brought to the welfare centre was 17·9, and the number of births to expectant mothers who attended the antenatal clinic was 255. The total births were 2843. Thus less than 10 per cent. of the mothers attended the antenatal clinic. The schools for mothers have made good progress and the mothers have shown a marked interest in the lectures and demonstrations arranged. Among the school-children nearly 90 per cent. of the medical defects followed up were treated, but only 11 per cent. of the dental defects. In an appendix on school dental work, Dr. Buchan points out "that as a result of all the dental inspection, clerical notices, and visitation by the health visitors only 563 out of 9358, or 6 per cent., of the children requiring treatment received the same up to Dec. 31st, 1923." Dr. Buchan goes on to urge the importance of attention to the teeth during childhood.

Dr. Buchan gives the history of the negotiations for an open-air school which have been going on since July, 1911, and points out that the provision of an up-to-date open-air school with a mentally defective

department would enable the unsuitable and inefficient schools at Furness-road, Leopold-road, and Leinster-road to be abolished. The percentage of verminous children has been reduced from 20 in 1914 to 7·1 in 1924. In December the Education Committee approved the formation of an experimental class for stammerers. Willesden is badly off for an efficient home-nursing service. There are some eight nurses at work in connexion with churches and associations, in addition to the one home nurse employed by the council, whereas Dr. Buchan estimates that some 30 to 40 are needed. An orthopædic clinic for crippled children is another urgent need, and it is suggested that a local clinic be established to be based on the Stanmore Hospital and staffed by that institution. The staff of sanitary inspectors for dealing with housing inspection Dr. Buchan considers to be quite inadequate, and he suggests it be augmented.

Tottenham.

Dr. David C. Kirkhope reports that "the one great outstanding environmental defect in the district is the lack of housing accommodation." Quite a number of houses are ripe for demolition. The housing of Tottenham people has not been improved by the erection of L.C.C. houses, as these are let to families displaced from other parts of London. The pollution of the tributaries of the Lee has received special consideration, but the condition of the river is not yet satisfactory. Dr. Kirkhope hopes that this river "may yet come to be regarded as a place of beauty and a source of pleasure." A preliminary account is given of the trial of an anti-scarlatinal serum, and Dr. Kirkhope thinks the results are encouraging. The last effort to establish a branch of the District Nursing Association in Tottenham failed, and Dr. Kirkhope suggests that the council should "not allow this matter to rest until Tottenham is adequately equipped with a nursing staff for the domiciliary treatment of those requiring expert nursing care in illnesses other than those of an infectious character." The school report shows that 137 cases of otorrhœa have been treated by ionic medication and that in 82 of these the discharge from the ears has ceased. It is not claimed that these 82 have been cured and they will be kept under observation for a long period. Arrangements have been made with the North Middlesex Hospital for the operative treatment of children suffering from enlarged tonsils and adenoids, and provision is made for retention of cases in hospital where necessary.

Ilford.

Dr. A. H. G. Burton says that the housing difficulty in Ilford "has been very little eased." An inquiry at the end of the year showed "that just over 150 gallons of Grade A milk (or about one-tenth of the total sale of all milk) was retailed daily in the district." Dr. Burton thinks that the standard of Grade A milk is not exceptionally high and does not see why all milk sold should not be Grade A. He thinks the designations of milk have been unncessarily multiplied. He finds little demand at present for pasteurised milk sold as such. "Much milk is pasteurised and sometimes re-pasteurised, but is sold as pure fresh milk to the consumer." Dr. Burton gives some comparisons with past years in order to indicate the efficiency of the school medical service. In 1908 there were 135 cases of ringworm in the Ilford schools; at the end of 1924 there were only five. The 1919 percentage of uncleanliness—namely, 10·7—became 4 in 1924. After the war there were 30 cases of itch discovered by medical inspection and 116 at the clinic. Last year the corresponding figures were two and three respectively. The cases of impetigo, or contagious sores, have been reduced from 546 to 243. An open-air school is still under consideration, but a site has been approved by the Board of Education. There is no school for mentally defective children. There are 30 young persons over 16 who were certified to be feeble-minded when at school in Ilford and who received no training. "There are 20 feeble-minded children at present attending the elementary schools and seven not attending any school who should be receiving education in a special school, either day or residential."

Edmonton.

Dr. H. W. Harding records that ten cases of encephalitis lethargica were notified in Edmonton, three of which ended fatally. Of the seven survivors, one shows a lack of concentration only; another, who was previously dull, falls to sleep at frequent intervals for a short time; a third tells unreasonable lies and has become cowardly; a fourth is mentally normal, but almost completely paralysed and has to be fed; a fifth suffers from twitching of the lids and double vision; a sixth suffers from double vision, is sleepy during the day, and easily tired; the seventh has left the district. Dr. Harding knows of two other cases which were not diagnosed or notified. Both are of the Parkinsonian type with "a mask face, general weakness, and mental lethargy." A big scheme, to cost £140,000, is in hand to improve the sewage farm which it is hoped will prevent flooding in the low-lying parts of the town and enable the sewers to be self-cleansing. The sanitary inspector reports continuous trouble from gypsies of the lowest class. Trenches have been dug across entrances in order to prevent their access to vacant land. The corporation are negotiating for the purchase of a recreation ground which is a favourite encamping place of the gypsies and which it is hoped to "control" when the property has been transferred.

Wimbledon.

Dr. A. Gilmour reports that 87 working-class dwellings of the parlour type are in course of erection on the housing estate. A new system of water filtration has been installed at the municipal public bath, Latimer-road. Negotiations are still proceeding with the Ministry of Health for a sanction to a site and buildings for a new day-nursery. Ten cases of encephalitis lethargica were notified, eight during the first six months of the year. Two cases were admitted to the isolation hospital, one of which was of the myoclonic type and ended fatally. The other cases were of a mild type, resembling influenza, and followed by giddiness, double vision, and drowsiness. A close investigation of the history did not establish any direct contact with other cases. A piece of vacant land, at the junction of Wandle-, Leyton-, and Denburgh-roads, caused a nuisance owing to the dumping of offensive matter. All endeavours to trace the ownership failed, and the council obtained an Order from the Ministry of Health under Section 21 of the Public Health Amendment Act of 1907 to clean and fence the land. This was done after copies of the Order and statutory notices had been fixed to a post erected on the land for the requisite period. The school dental scheme needs extension, as the staff is unable to attend to the "leavers," which means that much of the good done by previous work is wasted.

Hendon.

Dr. T. S. McIntosh reports that the scheme for the new permanent isolation hospital, delayed by the war, now only awaits the approval of the Ministry of Health. A scheme for the coördination and extension of the maternity and child welfare and school medical work has been approved, by which the gap between infancy and the school age will be filled by reasonably continuous supervision and the treatment of dental and visual defects and of minor ailments will be adequately met.

Finchley.

Dr. Wilson Jameson thinks that Finchley's greatest need at the present time is a number of small houses containing a living room, scullery, bathroom, and two bedrooms. In the council's housing scheme this type forms less than 9 per cent. of the whole. "Such accommodation," he says, "is suitable for younger

married couples and can be let at a figure within measurable distance of an economic rent." Dr. Jameson regrets the resignation of Mr. Mellor, the organiser of physical training, and states that, in the short period of nine months, he was successful in securing the interest and coöperation of both staff and pupils, and that his work will prove of lasting benefit to the schools. He hopes that before long the Finchley education authority will find itself in a position to make this appointment a permanent one.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 1ST, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 45; scarlet fever, 1377; diphtheria, 849; enteric fever, 73; pneumonia, 573; puerperal fever, 37; cerebro-spinal fever, 8; acute poliomyelitis, 5; acute polio-encephalitis, 3; encephalitis lethargica, 48; continued fever, 1; dysentery, 6; ophthalmia neonatorum, 98. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 27 from measles, 9 from scarlet fever, 35 from whooping-cough, 16 from influenza, and 18 from diphtheria. There were 101 deaths of children under 2 years from diarrhœa and enteritis, as compared with 64, 50, 41, and 29 in the preceding weeks. In London itself there were 6 deaths from diphtheria, 7 from whooping-cough, and 2 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

C. R. Moore, W. J. Doody, and T. F. Crean to be Surg. Lts.

Surg. Comdr. R. B. Scribner is placed on the Retd. List with rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Maj. W. C. Nimmo, from half-pay list, retires on retired pay.

Capt. J. A. W. Ebden retires, receiving a gratuity.

ARMY RESERVE OF OFFICERS.

N. M. Maclennan, late 2nd Lt. 3rd Camerons, Spec. Res., to be Lt.

MILITIA.

Capts. H. Gwynne-Jones, G. E. Pepper, and W. A. Lethem to be Majs.

TERRITORIAL ARMY.

General Hospitals: Lt.-Col. (Bt.-Col.) J. H. Ray resigns his commn. and retains his rank with permission to wear the prescribed uniform.

General List: Capt. G. Moore (from R.A.M.C., T.A. Reserve) to be Capt.

Capt. H. D. Smart, having attained the age limit, is retired and is granted the rank of Maj.

Lt. T. S. Torrance (late Defence Force) to be Lt.

ROYAL AIR FORCE.

Squadron Leader H. Harvey is transferred to the Reserve, Class D.2.

INDIAN MEDICAL SERVICE.

The King has approved the grant of a temporary commission as Lt. to Bercut Narain Khan.

The King has approved the relinquishment of his temporary commission by Capt. Manmahan Shamnath Grutow, who is permitted to retain the rank of Capt., and has approved the resignation of his commission by Capt. A. F. G. Raikes.

KIRKBY MOORSIDE ORTHOPÆDIC HOSPITAL.—On July 31st Princess Mary opened the Yorkshire Orthopædic Hospital at Kirkby Moorside. The building consists of three wings with wards that will accommodate 100 beds; one of them is named after the Rt. Hon. J. R. Ferens, of Hull, who has given generously towards the cost. An operating theatre, a gymnasium, staff quarters, and a refectory have been provided, and the site was given by Mrs. Edward Thaw, of Welburn Manor.

Obituary.

WILLIAM WYNN WESTCOTT, M.B. LOND., M.R.C.S., L.S.A., D.P.H.

THE death is announced from Durban of Dr. Wynn Westcott, well known as one of the most active of London coroners, at the age of 77 years.

William Wynn Westcott was born at Leamington, the son of Dr. Peter Westcott, of Oundle. He was educated at Kingston-on-Thames Grammar School and University College, London, graduating in medicine at London University in 1871, after having taken the M.R.C.S. and L.S.A. a year previously. For ten years he was in general practice at Martock, Somerset, where he was certifying factory surgeon and local secretary of the Sydenham Society, and then came to London as medical officer of health for Islington, an appointment which he shortly relinquished on being chosen deputy coroner for Central Middlesex and Central London. Thereafter for a period of 26 years he acted as coroner for North-East London, during which time he held inquests numbering not many less than 1000 a year. At this time he was admitted a member of the Middle Temple.

With his original mind and outspoken habit, the coroner's court over which he presided became noteworthy for eliciting other important matters than the immediate cause of death in the particular case. At one time he noted that every tenth case he inquired into was a death of an infant while in bed, and the lenient view of an "accident" began to be less general. He was a sharp critic of official death returns, for he had abundant experience of the reluctance of medical men to certify the actual cause where this was due to fault or failing. Simple natural deaths of adults were in his view nearly all due to cerebral hæmorrhage or to syncope consequent on heart disease, but he would have been a bad judge before whom to advance this view when it might conceal more sinister circumstances. He formed the opinion that the best witness in most criminal injuries was the police surgeon of several years' standing, and that in cases of poisoning an analytical chemist was more useful than an expert pathologist. His book on the history and causation of suicide was based on knowledge and experience gained in the court where he had on the average a case a week to investigate. It was a great regret to him that the pathological discoveries of the coroner's court were not systematically recorded and preserved.

Public work outside the coronership occupied much of Dr. Westcott's time. He was one of the first presidents of the Society for the Study of Inebriety, he was a constant attender at the Medico-Legal Society's meetings, and for a long while he was a divisional director of the Red Cross Society in Islington. He collaborated with the late Mr. William Martindale, F.C.S., in the production of the Extra Pharmacopœia which appeared in 1883, and was sold out in a few weeks; and for 18 editions his intimate medico-legal knowledge and his shrewd advice in points of doubt and difficulty were invaluable in helping Mr. Martindale and his son to keep the volume scrupulously up to date as a work of reference. Dr. Westcott was a widely read man who placed his culture freely at the service of others. Quite recently he had contributed papers to the Theosophical Society on such subjects as conscience, prayer, music, and Mohammedan doctrine. He made a hobby of Egyptian and Hebrew antiquities and was an authority on books concerning magic and alchemy, being chief of the Rosicrucian Society of England.

His home life was marred by bereavement. His wife, the daughter of Mr. E. Crawford Burnett, predeceased him four years ago, and of his five children only a daughter survives. Two sons, one qualified in medicine, the other in dentistry, died at the outset of their careers, and he also lost two daughters. His memory will be cherished as one who did much for his time and generation.

GEORGE KENNEDY SMILEY, O.B.E., M.B., B.A.O. R.U.I.

Dr. George Smiley, Regional Medical Officer to the Ministry of Health in the Manchester area, whose death occurred recently at Alderley Edge, was born and educated in Londonderry, entering Queen's College, Belfast, for his first medical training. As a young man he was characterised by the independence of judgment, which marked all his life, while he was known among his student contemporaries as a skilful and daring half-back at Rugby football. He graduated in medicine at Dublin in 1897, went to sea for a year, and then, after a short period in the south of England as an assistant, settled in Londonderry in general practice. Here he grew interested in ophthalmology, and became attached as honorary surgeon to the Eye Hospital of the city, taking out for several years post-graduate courses at Moorfields. In 1906 he married and left Ireland to carry on a practice in Derby, and while here he began his intimate association with the British Medical Association on being appointed secretary of the Derby Division. He was duly elected on the Representative Body and the Council of the Association, and when the National Health Insurance Act came into force became secretary of the Derby Local Medical Committee, and later of the Panel Committee. In 1916 he was chairman of the Medical Benefit Sub-Committee, a position which he held for two years, when his fairness and width of outlook led to his election as chairman of the Insurance Committee.

When the war broke out he found work ready to hand at the depôt of the Sherwood Forresters at Normanton, where he eventually acted as P.M.O., and, though without a commission, his services were later recognised by the award of the O.B.E. About six years ago he contracted an acute sepsis which, after an illness of many months' duration, left him with a damage to his left hand, such as rendered it impossible for him to carry on general practice, so that his appointment upon the Regional Medical Staff of the Ministry of Health, which was particularly well justified by his character and career, was one that he was able to accept with gratification. He was selected to fill the important post of the Manchester area, and soon established himself in the esteem of the insurance practitioners in that city and of his own colleagues in the service. Unhappily signs of serious abdominal mischief showed themselves last year, and while a palliative operation gave him relief, and indeed wonderfully good health for 15 months, the issue was merely postponed. He died on August 2nd, bearing the last two months of his illness with fortitude under the care of a devoted wife, to whom we express our sympathy.

THE LATE DR. S. J. LEONARD.—Stephen Joseph Leonard, L.R.C.P. Irel., L.A.H. Dub., died at his residence, Warrington, on July 31st, in his sixty-ninth year. A native of Galway, he studied medicine at the Royal College of Surgeons in Dublin, where he qualified as licentiate in 1893. For a time he was in practice in Dublin, and then moved to London, where he remained for 20 years as a busy general practitioner. Eight years ago he took over the practice of the late Dr. Adams in Warrington, where he proved himself a highly popular and much respected physician. He leaves a widow and four sons.

THE LATE DR. G. L. L. HAWKEN.—Giles Lockwood Lang Hawken, who died recently at Brighton after a lengthy illness, was a well-known medical practitioner in the Hurstpierpoint district. A Cornishman by birth, he received his medical training at University College Hospital, London, and qualified with the M.R.C.S. and L.S.A. in 1874. He went to Hurstpierpoint in the following year, joining Dr. Holman, and with other partnerships carried on practice for 40 years. For many years he was surgeon to St. John's College, Hurstpierpoint—one of the colleges of the Woodard Foundation—and to the local company of the Volunteer Force. Very popular in the district, he had a wide practice, his cheery manner winning a large circle of friends. He retired about six years ago, and after a few years' stay in Devonshire went to Brighton, where he passed away. He was interred at Cuckfield on August 4th.

Correspondence.

"Audi alteram partem."

PERIODIC MEDICAL EXAMINATION.

To the Editor of THE LANCET.

SIR,—I have read with much interest Dr. Otto May's article on Periodic Medical Examination in THE LANCET of Jan. 24th. For some years past in my work at the Children Homes (Detskie Doma) in Temir Khan Schura, about 500 children, I have noted the results of periodical examinations of about 500 children in a book which I call the "Bio-Sanitary Passport." Each child has his own passport, that contains: (1) results of the periodic examination twice a year; (2) changes of health occurring during the year; and (3) the condition of the child's life. If such a passport could be kept from birth and continued until death we should gain: (1) knowledge of the developments and changes of the human constitution; (2) early recognition of character (both physical and psychical), and the possibility of drawing all the advantages of prognosis and prophylaxis.—I am, Sir, yours faithfully,

Dr. A. A. PETROVITCH,
Temir Khan Schura, Dayestan S.S.R., Union of Socialist Soviet Republics (Russia).

July 18th, 1925.

THE ÆTIOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—Long years ago, but not many months before Koch showed that tuberculosis was a micro-parasitic disease, I attended a Brown lecture delivered by Sir John Burdon Sanderson. The subject of the lecture was "scrofula," and the eminent lecturer told his audience that scrofula could not be a specific disease because he had collected dust from St. Paul's Cathedral, from Westminster Abbey, and from his own drawing-room; and in each instance the dust when inoculated into a guinea-pig had produced a tuberculous lesion.

It is interesting to compare this experience of mine with the opinions expressed by Prof. Powell White in THE LANCET of August 8th. He writes: "The great majority of pathologists have always recognised that the known phenomena of cancer are incompatible with the theory of an extrinsic specific causal agent. . . . To take one point only, it is now possible to induce cancer in animals without taking thought of any parasite. If an extrinsic parasite is to be considered necessary for the production of cancer, this organism must be present at all times either in all animals or else in the atmosphere."

My friend, the late Prof. Shattock, with whom I had the privilege of working for many years on the intimate pathology of cancer, held "that the parasitic hypothesis of the nature of cancer recommends itself as bringing the essential pathology of new growths into natural relation with other diseases, such as tuberculosis, the parasitic pathology of which admits of demonstration"; and further he believed that the parasitic hypothesis was the only one on which research on cancer could be hopefully based. I need scarcely add that Prof. Shattock was as conversant as any biologist (*pace* Prof. White) with the constitution of living matter. I am, Sir, yours faithfully,

CHARLES BALLANCE.

Harley-street, W., August 10th, 1925.

PERIODICITY OF CHOLERA IN INDIA.

To the Editor of THE LANCET.

SIR,—In reply to Sir Leonard Rogers's letter of June 14th, which refers to my note on the periodicity of cholera in India, I may say that I felt it incumbent on me to make my preliminary announcement as brief as possible. Apparently, however, brevity can be carried too far.

In a Memorandum on the Epidemiology of Cholera, which was written by me at the request of the Health Section of the League of Nations—and which I understand will be published shortly—I have given a more or less complete bibliography of the literature on the subject. H. W. Bellew's book and A. Herbert's work are both included in that bibliography, and are discussed in the Memorandum. The words "no such periodic trend" in my note in your columns were perhaps unfortunate, but referred, of course, only to the six-yearly periodicity, and were not intended to include Bellew's "three-year cycle," which he himself failed to substantiate. I think the last paragraph of my note plainly indicates that the Madras Presidency Public Health Department not only *can* foresee cholera epidemics, but *has* foreseen them in time to prevent disseminations of the disease. It is particularly with regard to the control of pilgrim and festival centres that we have scored our greatest successes.

I agree with Sir Leonard Rogers when he says that there are other conditions giving rise to cholera epidemics "not so simple as any 'three-year' or 'six-year' cycle." "The other work on the same subject" which I alluded to, and which is nearly ready for publication, will deal with a number of those conditions.—I am, Sir, yours faithfully,

A. J. H. RUSSELL,
Major I.M.S.

Madras, July 17th, 1925.

IS THERE A SEASONAL PERIODICITY IN SERUM RASHES?

To the Editor of THE LANCET.

SIR,—I do not think that the solution of this question is quite so simple as my friend, Dr. Brownlee, would have us believe. Some years ago (THE LANCET, March 2nd, 1918) you were good enough to publish certain tables, prepared by me, by which it was shown that the incidence of serum rashes varied with the age and sex of the patient. Other factors, besides age and sex, have to be taken into consideration—namely, the volume of serum injected (which may explain the age-incidence), the source of the serum, the quality of the serum—that is, whether it is whole or whether it has been refined—and, last but by no means least, the accuracy of the records. I confess to being horribly suspicious of those scanty rashes in July, August, and December in Table I. of Dr. Brownlee's letter. Those months are seasons of holidays and temporary assistant medical officers.

It so happens that some months ago I got out—with quite a different object—the figures for the North-Western Hospital for the years 1922 and 1923, in the same form as in Dr. Brownlee's Table I. Here they are, as in his Table II., with the exception of the theoretical number, which I, being no mathematician, am unable to supply. Perhaps he will do so.

—	Cases.	Rashes.	Percentage of rashes.
Jan.-March ..	539	225	41·7
April-June ..	354	147	41·5
July-Sept. ..	385	161	41·8
Oct.-Dec. ..	466	229	49·1

Dr. Brownlee appeals for information to those who possess it. Well, there are the records of over 20 years at the Eastern Hospital, Homerton, and of five years at this, the North-Western Hospital, Hampstead, of which, I am sure, the Metropolitan Asylums Board would allow him to make use, and for the accuracy of which I can vouch, so far as hospital statistics can be accurate.

I do not dispute the importance of the question in respect of the epidemiological points referred to by Dr. Brownlee.—I am, Sir, yours faithfully,

E. W. GOODALL.

North-Western Hospital, Hampstead, August 9th, 1925.

FAMILIAL ABDOMINAL LESIONS.

To the Editor of THE LANCET.

SIR,—I read with much interest the article by Mr. G. P. B. Huddy in THE LANCET of August 8th. He assumes that in certain families a type of stomach exists that either anatomically or functionally produces gastric or duodenal ulcer or carcinoma. Is it not at least equally, or more likely, that the familial factor, which one can admit, is concerned with diet, more particularly, as he suggests, with bad teeth, which again are possibly if not probably the result of diet? My own family history would appear to support his thesis. My maternal grandparents reared 13 children. Of these four (all females out of a total of six) suffered from stomach disease. My mother suffered from gastric ulcer for the last four years of her life, with indigestion and hæmatemesis, and died probably (almost certainly) of gastric cancer. An aunt died of hæmatemesis, another of perforated gastric ulcer, and a fourth suffered from severe attacks of melæna and indigestion. This was a long time ago, and I do not know if they had good or bad teeth, *but* I do know that as children and young adults they drank well water, and it was the family practice at the end of a meal to put salt in their tumblers and count "heads" of the visible animalculæ so killed. *This in a doctor's house!* Personally I regard the cause of ulcer as being due to sepsis. I cannot remember seeing a case of chronic ulcer with a clean mouth of natural teeth, though I have seen them in cases where carious teeth have been removed and a false set substituted after the ulcer had occurred.

While on this subject I may perhaps be allowed to add the following interesting fact. Yarmouth is annually visited by a large number of the Scotch fisher-folk; it is an unquestioned fact among the members of our hospital staff that with their arrival there is a greatly increased rate in the admissions for perforated ulcers. I should say that we usually get three or four admitted during the season of three months. I myself had three cases last fishing. What the factor is is only guesswork, but they are great salt eaters, and the girls drink the brine out of the barrels. Also they are perforce uncleanly in their habits and their teeth are not good.

I am, Sir, yours faithfully,

R. LEONARD LEY, M.B., B.C. Camb.

August 10th, 1925.

P.S.—In regard to my mother's family, the boys all, as far as I know, escaped stomach trouble, yet the relative incidence in males is much greater. The boys would be more often away from home and would and did leave home earlier. This points very strongly to the foul well water being the causative factor.—i.e., sepsis.

THE SITE OF BETHLEM HOSPITAL.—The governors of Bethlem Hospital have offered to present five acres of the site to the London County Council as an open space. Of the total of 14 acres, which will be vacated by the transfer of the hospital to the Monks Orchard Estate, about three are occupied by the buildings.

WORK AND FINANCE OF ST. BARTHOLOMEW'S HOSPITAL.—In 1924 the excess of ordinary income over total expenditure was £9535; the ordinary income was £181,805. The in-patients numbered 9208, and their average stay was 23·73 days; the first attendances of casualty patients numbered 67,000; 2734 cases of street accidents or illness were brought in—nearly eight a day. Since the additional accommodation required cannot be provided on the site the governors have bought for £51,262 premises in Charterhouse-square and Charterhouse-mews suitable for the housing of a large portion of the nursing staff. The first block of the new nursing home has cost £96,000, and the further section now being built will entail additional expenditure of £87,000. The nursing staff numbers 324, which is insufficient to allow for holidays, illness, and emergencies, and a material increase is contemplated. Meanwhile the governors report "a marked decrease" in the number of applications for general training. The hospital's laundry work cost £7383, and more than a million and a quarter pieces were washed during the year.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Adjournment for Summer Recess.

BOTH Houses of Parliament adjourned for the summer recess on Friday, August 7th, until Nov. 16th. In the House of Lords the Royal Assent was given to over 60 Acts passed during the session, including the Therapeutic Substances Act, the Diseases of Animals Act, the Summer Time Act, the Public Health Act, and the Dangerous Drugs Act.

HOUSE OF COMMONS.

TUESDAY, AUGUST 4TH.

National Health Insurance Regulations.

Mr. HARNEY moved: "That a humble Address be presented to His Majesty praying that the National Health Insurance (Medical Benefit) Amendment Regulation (No. 2), 1925, which was presented to Parliament on the 6th day of July last, may be annulled." He said his motion was really directed against one part of the Regulation. Under the National Insurance Act the country was divided into areas, each administered for medical benefit purposes by a committee of representatives of insured persons, of approved societies, and of the medical profession. Subordinate to that body there was a subcommittee in each area whose function was to hear and conciliate or decide with reference to grievances alleged by patients against the conduct of panel doctors. It was important that such a committee should have upon it a representative of the medical men so as to prevent panel doctors being victimised. It was equally necessary that there should be on it representatives of the insured, because otherwise the doctors might be "whitewashed." It was essential that neither party should have a controlling voice. The position was met 13 years ago by composing these committees of six—three representing the insured persons and three from an outside body selected by the panel doctors. The chairman was elected by a majority of votes.

This system worked exceedingly well for 13 years, and it was not until recently that difficulty arose owing to the Regulation which he was asking the House to annul. It arose in London because the medical members of this subcommittee were not agreeably disposed towards a chairman who had been there seven years, and who had given the utmost satisfaction to the other members. In their view he did not lean as much in their favour as they wished, and three of them stopped away and rendered abortive the whole proceedings of the subcommittee. The Minister of Health, of course, acted properly, but by reason of some misunderstanding the only side that was heard before this new Regulation was made was the medical side, the very one which should have been least heeded under the circumstances. The new Regulation did three things. It said that the chairman in the future should be elected not by a majority but unanimously, and that if there was default in the finding of the chairman, or the proper election of a chairman, the Superintending Insurance Committee was to be skipped over and the whole power was to pass directly to the Minister. Surely it was contrary to every principle of local government that a body which had the administration of the medical benefits of this insurance scheme, and had to impose penalties on doctors who acted improperly, should not be given a voice in the appointment of their chairman in cases where a difficulty arose. In such cases under this Regulation the Minister could appoint a chairman who need not even be a member of the committee. He was glad to understand that the Minister was not indisposed to meet him as far as he reasonably could. Those for whom he spoke were not wedded to any particular form provided that the Minister made some suggestion that would leave the appointment of the chairman as it formerly was in the hands of the majority, so that it would not be in the power of one recalcitrant doctor to object and thus render the committee powerless.

Sir GEORGE HUME seconded the motion, and Mr. CAMPBELL, who said he happened to have been a member of the London Insurance Committee, and the chairman of the Pharmaceutical Committee, at the time that this incident occurred, supported Mr. Harney's proposal.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said he would not go into details owing to the lateness of the hour, but he must not be taken as accepting the account of what took place given by Mr. Harney. It was not accurate in several respects. The reason for the Regulation was that a state of affairs had arisen in which this subcommittee had ceased to function in London. That could not be allowed to continue in fairness to the patients. Some means had to be found of restarting the machinery. The object of the Regulation was not to interfere with local government, or to give the Minister arbitrary powers, but to find a way out of the impasse. He had gone into the question with the parties to the dispute and he was prepared to withdraw the article in the Regulation and to substitute for it another provision as follows: That the chairman of the medical subcommittee should, in the first instance, be appointed by a majority of the votes of the subcommittee. If he could not be appointed because the two sides of the committee were voting in opposite ways, the committee being divided in equal numbers so that no majority could be obtained, or if the committee failed to function by reason of the fact that the chairman appointed was unacceptable to some of the members of the committee and they did what had been done in this case, and declined to function, then the matter was to be referred to the insurance committee itself, and the insurance committee would then appoint the chairman, and they would have power to appoint a chairman who would not necessarily be a member of the committee, but if he were an outside person he would then have to be co-opted a member of the committee if he were accepted as chairman of the subcommittee.

But they had to contemplate the possibility that the subcommittee might not accept him as chairman, and again decline to function. In that case he (the Minister) would propose that the insurance committee should make representations to the Minister, and the Minister himself, after consultation with the committee and with the panel committee, would himself then appoint a chairman, who again might be somebody outside the committee, but who in that case would have to be co-opted. Those were the main proposals. He conceived that it was just possible that a deadlock might arise over some other point than the acceptability of the chairman, and he would safeguard against a possibility of that kind by providing that, if the committee were unable to function on account of some other reason than the fact that the chairman was not acceptable to the members, then the insurance committee should have the power to put before the Minister a scheme for the reconstruction of the medical services subcommittee, and the Minister would have power to approve it or to modify it. The proposal was one which went as far as he could go.

Mr. HARNEY said in the circumstances he would withdraw his motion.

Dr. SALTER, speaking on behalf of the doctors concerned, particularly those on the London panel, said that the compromise suggested would be entirely acceptable.

WEDNESDAY, AUGUST 5TH.

Civil Population and Poison Gas.

Mr. CECIL WILSON asked the Secretary of State for War whether the Committee of Imperial Defence had come to any decision as to the methods to be taken for the protection of the civil population against poison gas; and, if not, when such decision might be expected.—Sir L. WORTHINGTON-EVANS replied: Consideration of this question is progressing, but I cannot say when it will be completed.

Sir J. NALL: Is it not a fact that the Moscow Government are offering prizes for new inventions in poison gas?

No answer was given.

Medical Advice to Wives of Naval Officers.

Mr. HARRISON asked the First Lord of the Admiralty whether he would arrange for medical advice and treatment to be given to wives of naval officers whenever possible.—Mr. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: The wives of a few naval officers serving in shore establishments and paid out of Vote 8 may be attended, free of charge, by the naval medical officer of the establishment, provided his duties permit; but I regret that in view of the urgent need for economy it is not possible to arrange for the extension of this privilege to the wives of naval officers generally.

Medical Officer of Scottish Board of Health.

Dr. SHIELS asked the Secretary for Scotland if a medical officer had recently been, or is being, appointed by the Board of Health; what salary was offered; and whether or not the vacancy was advertised.—Captain ELLIOT (Parliamentary Secretary to the Scottish Board of Health) replied: No appointment has recently been made to the medical staff of the Board of Health. They have, however, under consideration the question of filling a vacancy caused by the death of one of their medical officers together with the appointment of an additional district medical officer. When a decision has been reached these vacancies will be advertised in accordance with the usual practice and all necessary particulars will be available to intending applicants.

Service Patients in Mental Hospitals.

Mr. WALTER BAKER asked the Minister of Health whether any distinction was made between ex-Service men and other patients during their stay in mental hospitals; what was the average cost of the food supplied to each ex-Service

patient at present in the mental hospitals throughout the country; whether he was aware that bread and margarine were given for breakfast and tea without variation throughout the year in many of these institutions; and whether he would consider the possibility of increasing the standard of comfort of the men who were under the control of his department.—Sir KINGSLEY WOOD replied: "Service" patients are classified in the private class during their stay in mental hospitals, and a weekly allowance of 2*s.* 6*d.* is provided to each man for additional comforts. The limited class of ex-Service patients for whom the Ministry of Pensions do not accept responsibility are also treated as private patients, but receive no weekly allowance. It is not possible to state the average cost of the food supplied to "Service" patients separately from the other patients in the mental hospitals. With regard to the last part of the question, I am informed that since the publication of the report of the Departmental Committee on Dietaries in Mental Hospitals the breakfast and tea meals have been considerably varied. I may add that the welfare and comfort of the inmates of mental hospitals are subjects which are constantly in the minds of the authorities responsible.

Child Labour in China.

Mr. JOHNSTON asked the Secretary of State for Foreign Affairs whether he was now in a position to give any information bearing upon the question whether the British mill-owners at Shanghai had agreed to adopt the regulations of the Child Labour Commission, whether or not these regulations were adopted in the other factories in Shanghai.—Mr. MCNEILL (Under Secretary for Foreign Affairs) replied: The regulations proposed by the Child Labour Commission have not been voluntarily adopted by any of the mills in the International Settlement at Shanghai pending enforcement by by-law, but the Cotton Mill-owners' Association, including all British mills, have expressed approval of their main provisions. I am informed that since September, 1923, the British mill-owners in Shanghai have endeavoured to keep out boys under 10 years and girls under 12 years of age.

Medical Supplies in Morocco.

Mr. MACKENZIE LIVINGSTONE asked the Secretary of State for Foreign Affairs whether, in view of the increasing scale of military operations, and particularly aerial bombardment, in Morocco, and the suffering likely to be caused through lack of medical stores, he was now prepared to support the claim of the British Red Crescent Society to be allowed to supply the Riffs with such stores.—Mr. MCNEIL replied: H.M. Government are not prepared to intervene in a matter respecting which it is entirely for the Spanish and French Governments to make a decision.

THURSDAY, AUGUST 6TH.

Dietary at Leeds Pensions Hospital.

Mr. ROBINSON asked the Minister of Pensions whether his attention had been drawn to complaints made by patients in the Beckett's Park Hospital, Leeds, as to the nature of the food supplied; and whether he would give instruction that in future butter should be supplied and that these disabled men should not be given bread and margarine to eat.—Major G. C. TRYON replied: I am not aware of any complaints made by patients in the hospital referred to in regard to the nature of the food supplied, and none were disclosed at a recent inspection of this institution. With regard to the latter part of the question, the medical officer in charge of a case is authorised to prescribe the supply of butter where he considers it necessary. I am not prepared to authorise, in the case of this hospital, any change in the general scheme of diet which has been adopted on medical advice for all the hospitals of the Ministry.

The Use of a New Anæsthetic.

Colonel DAY asked the Minister of Health if his attention had been drawn to the recent discovery by Dr. A. J. Copeland of a new anæsthetic which would serve as an alternative to cocaine; and if he had considered whether this new drug had any toxic properties which brought it within the scope of the Dangerous Drugs Act.—Sir W. JOYNSON-HICKS (Home Secretary) replied: I am not aware of any such discovery by Dr. Copeland, but he recently made an investigation into the properties and effects of psicaine, a cocaine substitute prepared by German chemists, the results of which were published in the medical press. A caution as to the supply and use of the drug has been issued through the pharmaceutical press.

Purity of Milk and Food Products.

Sir WILFRID SUGDEN asked the Minister of Health (1) whether, in view of the fact that milk was found to be adulterated and not up to standard by his officers in 1922 in 7·7 per cent. of samples taken, in 1923 in 7·8 per cent., and in 1924 in 7·7 per cent., he would take steps to reduce this high percentage of adulteration; and (2) whether, in view of the high percentage of adulteration or not up to standard of general food products—viz., 5·9 per cent.—discovered by his officers during 1924 and its consequences on our population, he would take further steps to ensure the purity of food products.—Mr. NEVILLE CHAMBERLAIN replied: The general question of food adulteration is engaging my attention, and I am about to issue regulations designed to give effect to the principal recommendations of the recent Departmental Committee. I may also remind my hon. friend that as regards milk additional powers of sampling are contained in the Milk and Dairies (Consolidation) Act, 1915, which will come into operation on Sept. 1st next.

Maternity Centres and Birth Control.

Mr. THURTLE asked the Minister of Health if he was contemplating any changes in the instructions issued by his department to maternity centres for their guidance in dealing with birth control.—Mr. NEVILLE CHAMBERLAIN replied: I have had this matter under very careful consideration and have decided that in all the circumstances of the case it is inopportune to make any change in the instructions.

Expectation of Life and Post Office Insurance.

Sir GERALD STRICKLAND asked the Postmaster-General whether, in view of the established facts as to the prolongation of the expectation of life on account of the progress of medical science, he was prepared to revise accordingly the tables of the expectation of life on which premiums were paid for Post Office insurances.—Sir W. MITCHELL-THOMSON replied: I have had this matter under careful consideration, but regret that I am not yet in a position to make any statement.

Veterinary Inspection of Dairy Herds.

Mr. MACKENZIE LIVINGSTONE asked the Secretary for Scotland what local authorities in Scotland now carried out veterinary inspection of dairy herds.—Sir JOHN GILMOUR replied: The Scottish Board of Health have no definite information in regard to a systematic veterinary inspection of dairy herds in rural areas. But it is understood that in some of these areas a more or less systematic inspection is in operation. The counties of Lanarkshire, Ayr, and Dumfries have whole-time veterinary inspectors who endeavour to overtake this work. It is hoped that more detailed information will be available when the Milk and Dairies Act, 1914, has been in operation for some time. So far as the majority of burghal areas is concerned, and particularly in the cities and large towns, a systematic veterinary inspection of cows is carried out once a quarter or less frequently. In no case does the above veterinary inspection include systematic tuberculin testing.

FRIDAY, AUGUST 7TH.

Incurable Officers in Pensions Hospitals.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Pensions whether he would consider an alteration in the present system of procedure with respect to officer patients in Pensions Ministry hospitals, so that when an officer was certified by a specialist medical officer to be incurable he should be boarded at once and not be compelled to apply for a medical board, which caused several weeks' delay in the consideration of his case.—Major G. C. TRYON replied: I am glad to inform my hon. and gallant friend that the procedure suggested by him has recently been authorised. In any case where an officer in receipt of conditional award is considered by the medical officer in charge of the hospital to be likely at the conclusion of his treatment to be in a materially more disabled condition than is represented by his current award, the patient is boarded before discharge and a provisional award suitable to his condition is made.

Cost of Medical Research.

Mr. DUCKWORTH asked the Minister of Health the sum devoted by the State this year to the promotion of medical research; and what amount had been similarly applied in each year since the war.—Mr. W. GUINNESS (Financial Secretary to the Treasury) replied: The provision made in the Scientific Investigation Vote, 1925–26, in aid of the expenses of the Medical Research Council is £135,000. The grants in previous years have been as follows:—1924–25, £140,000; 1923–24, £130,000; 1922–23, £130,000; 1921–22, £130,000; 1920–21, £125,000; and 1919–20, £148,500. In addition certain inquiries are from time to time carried out by or on behalf of the Ministry of Health, the Scottish Board of Health, and the Service Departments. It is not practicable to give the whole cost of these inquiries, but it is relatively small.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly Final Examination of the Conjoint Board, held from July 7th to 31st, the following candidates were approved in the undermentioned subjects:—

Medicine.—R. B. Alston, St. Thomas's; W. A. Ball, King's Coll.; F. G. Beauchamp, Birmingham; J. M. Brodrick, Liverpool; Irene F. Callender, St. Mary's; J. P. Carpenter, Birmingham; W. S. Chapman, Univ. Coll.; Dorothy A. Chown, St. Mary's; G. Coope, Manchester; P. F. S. Court, Guy's; Anne A. Craig, Royal Free; A. C. Dalzell, King's Coll.; May W. de Livera, Ceylon and Royal Free; H. V. Dicks, St. Bart.'s; J. Dockray, Cambridge and St. Bart.'s; Marjorie M. Duggan, Cardiff; G. H. Dymond, St. Bart.'s; J. Evans, Guy's; J. P. Evans, Charing Cross; M. M. Fikri, Cairo; G. W. S. Foster, St. Bart.'s; A. C. Gairdner, London; S. E. Gawthrop, Durham; A. P. Gorham, Bristol; G. J. Gregerson, Adelaide and London; R. N. Hall and L. J. Haydon, St. George's; Kathleen M. Horton, London; J. P. Huins, Birmingham; J. W. Jeffery, St. Mary's; Mary Jennings, Royal Free; D. M. Johnson, and G. L. C. Jones, St. Bart.'s; Adele A. Kahan, L. C. Kalra, and H. Kesselson, Charing Cross; R. H. Knight, St. Bart.'s; Alice B. Laker, Charing Cross; T. P. Lalonde, Bristol; A. H. Levers, Westminster; S. Levy-Simpson, London; G. M. D. Lobban, Leeds; Mary C. Luff, Univ. Coll.; I. H. Mackay, Sydney and London; Nancy S. Marshall, St. Mary's; S. Mellins, Middlesex; P. B. P. Mellows, St. Bart.'s; D. G. Morgan, Cardiff; Margaret E. Morton, Royal Free; Gertrude M. Nicholson, Durham; T. C. Oakley, Birmingham; S. C. St. G. C. Parry, Middlesex; F. B. Parsons, St. Bart.'s; L. B. Phillips, Bristol; H. P. Pieris, Madras and Middlesex; O. L. Prosser, Liverpool; R. L. Quilliam, King's Coll.; L. D. Richards, Charing Cross; Bertine M. Rix, St. Mary's; Alice L. Robson, Royal Free; E. J. Rubra, Westminster; A. G. Schroeder, Adelaide and London; J. W. Shackle, Guy's; Sara C. A. Sharpe, St. Mary's; E. V. Slaughter, Middlesex; E. Sorabjee, Guy's; A. W. E. Soysa, King's Coll.; A. W. Spence, Cambridge and St. Bart.'s; R. K. Stockbridge, Adelaide and London; R. G. Strouts, London; B. R. Sworn, St. Thomas's; A. G. S. Tabb, Charing Cross; G. M. Tanner, St. Bart.'s; Elizabeth L. Taylor-Jones, Royal Free; E. J. E. Topham, St. Bart.'s; I. Vitenson, London; W. N. Welinkar, Middlesex; H. L. Wilson, St. Bart.'s; Jessie Wiltshire, Univ. Coll.; F. G. Winterton, St. Bart.'s; J. Wiseman, Guy's; and Rosa S. Wordsworth, Charing Cross.

Surgery.—Y. Abdel-Messiah, Middlesex; A. R. Adderley, St. Thomas's; P. W. A. Agnew, St. George's; R. M. Ainsworth, Liverpool; V. M. Albuquerque, King's Coll.; C. R. Alderson, Univ. Coll.; R. C. Amies, St. Thomas's; E. N. C. Annis, Guy's; S. A. Antoun, Birmingham; H. Y. Awad, St. Thomas's; H. Aziz and Marion L. Bainbridge, Manchester; J. C. H. Baird, St. Bart.'s; D. G. Balakirsky and A. L. Banks, Middlesex; J. V. Bannehr, S. B. Benton and W. F. D. Benton, St. Bart.'s; E. I. Bieber, Liverpool; C. E. Bigger, St. Thomas's; A. D. Blackwell, Middlesex; Ellen W. M. Bridge, Manchester; W. Buckley, London; F. Bunje, St. Mary's; Lillie M. Burton, Manchester; De L. Carey, St. Mary's; W. S. Chapman, Univ. Coll.; B. Chaudhuri, Middlesex; W. F. Cooper, St. Bart.'s; P. F. S. Court, A. R. Cox, and P. C. Cumber, Guy's; P. E. J. Cutting, St. Bart.'s; S. D. Dalal, Bombay; E. A. Darukhanawalla, Middlesex; S. W. Davies, Cardiff; Winifred de Kok, Royal Free; G. C. Dewes, St. George's; Mary G. H. Dickson, King's Coll.; G. Dignam, Manchester; W. H. Dowell, Guy's; I. A. Evans, Cardiff; O. F. Farndon, R. R. Fells, and P. H. Flockton, St. Bart.'s; R. M. Forsayeth, London; S. W. Gabbe, St. Thomas's; S. E. Gawthrop, Durham; J. F. E. Gillam, St. Thomas's; B. M. C. Gilsenan, St. Bart.'s; Z. A. Goma, Birmingham; E. P. Gough, St. Bart.'s; S. E. Goulstine, Durham; D. P. Gray and W. H. Green, Middlesex; L. A. N. Greenway, King's Coll.; H. W. Greenwood, Middlesex; Margaret H. Greg, Royal Free and Manchester; J. C. P. Grey, St. Thomas's; H. R. Griffin, Middlesex; B. J. Griffiths, Cardiff; G. J. Gross, King's Coll.; K. H. A. Gross, St. George's; W. S. Grove, Guy's; F. P. Guilfoyle, St. Bart.'s; C. W. Harrison, Los Angeles and St. Bart.'s; A. Hobson, Birmingham; D. P. Holmes, Westminster; R. L. Holt, Manchester; L. E. Houghton, Guy's; S. Howard, London; Ruth T. Hurnard, Royal Free; I. A. Jackson, Guy's; E. D. Jones, St. Bart.'s; J. Kahanas, Berne and London; W. R. Kirkpatrick, Guy's; P. H. Knowles, Bristol; S. N. Lahiri, St. Andrews Univ.; M. E. Lampard, King's Coll.; C. G. Le Couilliard, Middlesex; A. H. Levers, Westminster; H. M. Levy, Middlesex; S. Levy-Simpson, London; D. W. E. Lloyd, Guy's; A. J. McMillan, Middlesex; F. G. Martin, Charing Cross; R. G. Mathews, Univ. Coll.; Clara Mendelssohn, Westminster; R. D. Milford, St. Thomas's; D. E. J. Mitchell, Manchester; F. E. Montague, St. Thomas's; C. M. Moody, St. Mary's; P. Morton, London; D. H. P. M. Q. Mylechreest, St. Thomas's; T. K. Natesan, Madras and London; C. E. Nicholas, London; H. E. Nourse, Middlesex; Eileen A. Nugent, Royal Free; T. C. Oakley, Birmingham; E. J. O'Keeffe, London; C. J. S. O'Malley, St. Thomas's; A. Orliansky, Middlesex; C. H. Parker, London; G. E. G. Peirce, St. Mary's; W. G. Porter, Guy's; Winifred E. Probert, Westminster; F. W. F. Purcell, St. Thomas's; Marjorie D. Reddan, Royal Free; A. M. Rhydderch, London; L. D. Richards, Charing Cross; R. I. Roberts, Manchester; P. H. Rossier, Lausanne and Zurich; D. J. L. Routh, Univ. Coll.; I. J. Sachs, Middlesex; M. Schwartz, Univ. Coll.; S. T. Seccombe, St. Thomas's; J. Silverstone, Westminster; H. J. Simmons and K. S. Smith, Middlesex; R. E. Smith, Guy's; J. Spencer, St. Bart.'s; F. E. Stabler, Durham; H. B. Stallard, St. Bart.'s; C. A. Stanley, St. Thomas's; A. F. H. Stewart, Guy's; Mary Stirk, Manchester; Stella C. C. Stuart, Royal Free; E. D. Thomas, Middlesex; R. S. Tooth, St. Bart.'s; D. Vidofski and R. J. Vince, London; F. H. A. Walker, St. Bart.'s; E. Walsh, Manchester; L. H. F. Walton, St. Thomas's; T. E. Watkins, Cardiff; J. K. G. Way, Guy's; Ruth E. Webster, Westminster; H. L. Wilson, St. Bart.'s; J. T. Woodhead, St. George's; A. T. Worthington, St. Bart.'s; and H. P. Yew, Guy's.

Midwifery.—A. R. Adderley, St. Thomas's; R. M. Ainsworth, Liverpool; V. Albuquerque, King's Coll.; C. E. Allen, Guy's; R. B. Alston and R. C. Amies, St. Thomas's; H. K. Ashworth, Manchester; F. J. Bach, St. Bart.'s; Marion L. Bainbridge, Manchester; W. Baker, Leeds; A. L. Banks, Middlesex; J. V. Bannehr and S. B. Benton, St. Bart.'s; Florence K. Bibby, Charing Cross; C. E. Bigger, St. Thomas's; C. R. Birnie, King's Coll.; M. S. R. Broadbent, St. Bart.'s; Gladys Brocklehurst, Manchester; V. H. Brink, London; A. Burlingham, Univ. Coll.; Lillie M. Burton, Manchester; E. S. Caley and A. L. Canby, St. Thomas's; E. Carew-Shaw, St. George's; M. S. Chafey, Charing Cross; G. P. Chandler, St. Thomas's; J. R. B. Chatterton, Univ. Coll.; B. Chaudhuri, Middlesex; S. Chazen, Guy's; F. H. Chick, Birmingham; J. C. K. Chilcott, King's Coll.; A. Clark, St. Bart.'s; W. J. S. Clemmey, Liverpool; R. Cohen, Leeds; A. Coleman, London; A. B. Connell, St. Thomas's; R. G. Cooke, Liverpool; D. H. Couch, Guy's; J. B. Crabtree, St. Bart.'s; Olive C. Crowley, Charing Cross; A. T. Curnow, Guy's; P. E. J. Cutting, St. Bart.'s; A. J. Daly, London; A. C. Dalzell, King's Coll.; S. W. Davies, Cardiff; T. E. Davies and T. S. Dewey, St. Thomas's; Marjorie M. Duggan, Cardiff; J. J. F. Dunn, St. Mary's; G. C. Edwards, St. Thomas's; J. A. Edwards, St. Bart.'s; E. S. Evans, St. Thomas's; R. Evans, Guy's; M. M. Fikri, Cairo; B. Fink and S. J. Firth, Manchester; P. H. Flockton, St. Bart.'s; Elsie G. M. Ford, Leeds; J. N. C. Ford, St. Bart.'s; H. K. Fozdar, London; J. Freudenheim, Charing Cross; T. D. W. Fryer, St. Thomas's; S. C. Gawne, Liverpool; P. Gibbin, Cardiff; J. F. E. Gillam, St. Thomas's; W. L. Gillbard, St. Bart.'s; R. S. Glennie, St. Thomas's; G. Gorstige, Leeds; D. P. Gray, Middlesex; R. M. Greenop, King's Coll.; H. W. Greenwood, Middlesex; F. P. Guilfoyle, St. Bart.'s; B. Guyster, London; J. G. Hattingh, Liverpool; A. C. de B. Helme, St. Bart.'s; A. Hobson, Birmingham; R. L. Holt, Manchester; M. F. Hope, King's Coll.; F. R. How, St. Thomas's; Mary H. McC. Huggett, King's Coll.; Ruth T. Hurnard, Royal Free; D. H. Isaac, Cardiff; R. J. Isaac, St. Mary's; K. M. N. Isaacs, London; I. A. Jackson, Guy's; N. M. Jerram, St. Thomas's; T. Jones, Cardiff; Adele A. Kahan, Charing Cross; J. H. Kitson, Manchester; Olive C. Knight, Charing Cross; R. H. Knight, St. Bart.'s; F. W. Law, C. G. Le Couilliard, and D. T. Lewis, Middlesex; P. C. K. Lewis, Birmingham; R. Lewthwaite, Middlesex; L. Lipschitz, Berlin and Middlesex; A. J. Lomax, Manchester; Mary C. Luff, Univ. Coll.; W. H. S. McGregor, St. Bart.'s; Mary A. C. MacHugh, King's Coll.; B. W. S. Mackenzie, Univ. Coll.; Evelyn T. D. Maclagan, Royal Free and St. Mary's; G. R. Malkin, St. Bart.'s; I. O. Martin, Cardiff; R. G. Mathews, Univ. Coll.; R. W. L. May, St. Thomas's; W. Mayne, Guy's; A. J. M. Melly, St. Bart.'s; Clara Mendelssohn, Westminster; R. D. Milford, St. Thomas's; J. H. Miller, Birmingham; H. L. 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Russell, King's Coll.; C. H. Saint Johnston, Birmingham; J. W. Schofield, Middlesex; R. H. Scott, St. Mary's; J. A. Screech, St. Thomas's; M. Sendak, St. Mary's; W. D. Sheldrake, Guy's; Mary A. Silcock, Charing Cross; J. Silverstone, Westminster; H. Simmonds and G. Simon, St. Bart.'s; J. F. Simpson, St. Mary's; H. Sissons, Manchester; E. M. Smith, Univ. Coll.; K. S. Smith, Middlesex; L. G. Smith, St. Bart.'s; R. E. Smith, Guy's; H. B. Stallard, St. Bart.'s; Beryl M. Stevens, Royal Free and St. Mary's; I. H. K. Stevens, Univ. Coll.; R. K. Stockbridge, Adelaide and London; K. R. Stokes, St. Bart.'s; Stella C. C. Stuart, Royal Free; R. D. Summers, London; B. R. Sworn and C. C. Taffs, St. Thomas's; Dorothy S. Tait, St. Mary's; G. K. Taylor, St. George's; S. P. Taylor, Bristol; L. H. Thomas, St. Thomas's; R. Thorpe, St. George's; J. C. T. Tregarthen, Guy's; F. B. Turner, London; W. J. D. Twort, Univ. Coll.; D. Vidofski, London; D. C. Virmani, Charing Cross; H. Waldenberg, Leeds; F. H. A. Walker, St. Bart.'s; J. K. G. Way, Guy's; H. D. Weatherhead, St. Thomas's; T. C. S. Webb, Univ. Coll.; Ruth E. Webster, Westminster;

T. H. Wehlburg, St. Bart.'s; Janet Welch, Royal Free; J. G. Wigley, St. Thomas's; Beatrice A. Wilkinson, King's Coll.; G. H. J. Williams, London; H. Williamson, King's Coll.; N. J. Willans, Middlesex; H. Winch, St. Bart.'s; W. R. Wood, St. Thomas's; and H. R. Youngman, St. Thomas's.

THE LISTER WARD AT GLASGOW ROYAL INFIRMARY.—The famous Lister Ward, which was pulled down last year, has been "re-edified" at the Wellcome Historical Medical Museum in Wigmore-street. The walls and contents of the ward have been preserved and reconstructed, and the original fireplace and equipment transferred. This equipment includes the central pillar and round table, Lister's sterilising apparatus, and the actual beds in use in his time.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON).—At recent examinations the following awards for 1925-26 have been made:—Sarah Holborn Scholarship: Miss Mary Gould; Dr. Margaret Todd Scholarship: Miss M. M. White; School Jubilee Bursary: Miss O. N. Grant; Flora Murray Bursary: Miss H. E. Newman; Alfred Langton Scholarship: Miss G. V. Smallpeice; Mabel Sharman Crawford Scholarship: Miss E. T. Mess; Helen Prideaux Post-Graduate Scholarship: Miss Gladys Hill, M.B., B.S.; St. Dunstan's Medical Exhibition: Miss E. M. G. Stevenson; Mrs. George M. Smith Scholarship: Miss G. B. Castle; Isabel Thorne Scholarship: Miss Maureen Evans.

DONATIONS AND BEQUESTS.—The late Mr. G. Collis, of The Wick, Richmond Hill, Surrey, left by will, among other bequests, on his wife's death, £500 to the Croydon General Hospital and £500 to the Royal Hospital, Richmond.—By will the late Surgeon Lieut.-Colonel Heinrich Friedrich Lawaetz Melladew, Royal Horse Guards, left £1000 in memory of his late wife and her brother, Judge Bain, to Winnipeg Hospital towards the provision of an X ray outfit for the hospital; £500 to St. Dunstan's work for Blinded Sailors and Soldiers; and £500 to the Children's Country Holiday Fund.—Under the will of the late Mr. John Douglas Oliver, of Dacre-street, Morpeth, the testator left, on his wife's death, £3000 to the Morpeth Cottage Hospital and District Nursing Association.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—At Queen Mary's Hospital, Stratford, there will be an intensive course embracing general medicine, surgery, and the specialties from August 24th to Sept. 3rd. The sessions will begin either at 10 or 10.30 A.M. and continue until 5 P.M. In September a variety of courses will be held—viz., Diseases of the Chest at the Brompton Hospital, Sept. 21st to Oct. 3rd; Diseases of the Skin, Blackfriars Hospital, Sept. 7th to 19th, also the same date a course at the Infants Hospital; Ophthalmology at the Royal Westminster Ophthalmic Hospital, Sept. 7th to 26th; a series of weekly lecture-demonstrations in Electro-therapy at the Royal Free Hospital, Sept. 23rd to Oct. 14th, and a general course in medicine, surgery, and the special departments at the Westminster Hospital from Sept. 21st to Oct. 3rd. Copies of the syllabus of each of these courses may be obtained on application to the Secretary to the Fellowship of Medicine at 1, Wimpole-street, London, W. 1.

Appointments.

GREENWOOD, A. C., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Horncastle District of the County of Lincoln.

Vacancies.

For further information refer to the advertisement columns.

Birmingham University.—Lecturer in Bacteriology. £450.
Bradford Royal Infirmary.—Two H.S.'s. Each £200.
Bristol General Hospital.—H.P.'s, H.S., &c. Each at rate of £80.
Burnley, Victoria Hospital.—H.S. £200.
Derbyshire County Council.—Asst. Sch. M.O. and Tub. O. £650.
Greenwich Union.—Sen. Asst. M.O. £500. Also Asst. M.O. £400.
Hull, Victoria Hospital for Sick Children.—Res. H.P. £80.
Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £260.
Leeds General Infirmary.—Hon. Asst. Phys.
Leeds, St. James's Hospital.—Third Asst. M.O. £275.
Liverpool, Brownlow Hill Infirmary.—M.O. £750.
Manchester, Northern Hospital for Women and Children.—Hon. Asst. Gyn. S.
Manchester and Salford Hospital for Skin Diseases.—H.S. £160.
Manchester, St. Mary's Hospitals.—Hon. Asst. S.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. S.
Plymouth Borough.—Asst. M.O.H. £600.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. at rate of £75.
West Riding County Council.—Dist. Tub. O. for Barnsley. £600.

Births, Marriages, and Deaths.

BIRTHS.

DAVIDSON.—On August 4th and 5th, at 6c, Bickenhall-mansions, Gloucester-place, W., the wife of Maurice Davidson, M.D., of two sons (twins).
HEPPER.—On August 7th, at Frimley, Surrey, the wife of Dr. John E. Hepper, of a son.

MARRIAGES.

BOWIE—WILSON.—On August 1st, at the Barclay Church, Edinburgh, Major John Darling Bowie, D.S.O., R.A.M.C., to Winifred Margaret, daughter of the late John Wilson and Mrs. Wilson, of Braidwood, Corrennie-gardens, Edinburgh.
CARTER—WESTMACOTT.—On August 5th, at St. Martin-in-the-Fields, Ernest Edwin Carter, M.B., B.S., to Eileen Helen Maude Westmacott, second daughter of the late Colonel H. R. Westmacott, Welch Regiment, and Mrs. Westmacott, of Woodside, Ashley, Hants.
SIMPSON—BATTEN.—On August 5th, at St. Mary Abbot's, Kensington, Reginald Hugh Simpson, M.D., M.R.C.P., to Joyce Rayner Batten, M.B., B.Ch., younger daughter of Dr. and Mrs. Rayner Batten, of Campden Lodge, W.

DEATHS.

ATKINSON.—On August 6th, from pneumonia, Dr. Arthur William Atkinson, of Mirien House, Crewe.
DANIEL.—On August 2nd, at Beaminster, Dorset, Thomas Palmer Daniel, M.R.C.S., in his 89th year.
DUKE.—On July 22nd, at Kenmare, Victoria, B.C., Valentine de Saumarez Duke, L.R.C.S. Irel., L.K.Q.C.P. Irel., formerly of Nuwara Eliya, Ceylon, aged 79.
JOHNSON.—On August 9th, at 4, Heath-hurst-road, Hampstead, Florence, the dearly beloved wife of Dr. Rance Johnson.
KELLETT.—On August 3rd, at Waterloo-road, Bedford, Leonard Henry Kellett, M.D., Inspector-General R.N., retd., aged 73 years.
WYNNE.—On August 4th, at Killard, St. Martin's, Guernsey, John Darley Wynne, M.B., son of the late Frederick Wynne, Bishop of Killaloe.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, Wimpole-street, London, W.
MONDAY, August 17th, to SATURDAY, August 22nd.—ALL SAINTS HOSPITAL, Vauxhall Bridge-road, S.W. Clinical demonstrations Wednesday evening, Thursday afternoon and evening, and Saturday afternoon. Wed., 2 P.M., Mr. H. E. Griffiths on Neoplasms of the Testis.—QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford. Intensive course in General Medicine, Surgery, and the Specialties. First week as per syllabus. Morning and afternoon sessions.

INDEX TO "THE LANCET," VOL. I., 1925.

THE Index and Title-page to Vol. I., 1925, which was completed with the issue of June 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

THE LANCET: SUBSCRIPTION RATES.

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Notes, Comments, and Abstracts.

MEDICINE AND SCIENCE AT WEMBLEY.

A VISIT to the British Empire Exhibition at Wembley may be made the occasion of a useful study of public health and the applications of science to human need.

The Ministry of Health has issued a guide (price 3*d.*) to its exhibits in H.M. Government Pavilion, where the first hall is occupied with an historical sketch of the medicine-man with his amulets and charms, and the alchemist with his alembics, in contrast with the equipment of the modern laboratory. The exhibits illustrate the progress in the campaigns against malaria, leprosy, plague, and louse-borne diseases and in the technique of port medical work. In the second hall is a model of the Lister Ward and of a modern operating theatre, along with examples of water purification and sewage disposal, while the third hall contains well-thought-out schemes of applied medicine in municipal affairs, including housing, child welfare, industrial disease, pure food, and clean milk.

A second edition has now been issued of the handbook[1] to the exhibits of the Royal Society, which itself is worth the whole of an afternoon visit. This book is compounded of essays by some 24 distinguished scientific men in illustration of the demonstrations which are on view and of the progress of natural knowledge: it is not in any sense a glorification of modern science as the handmaid of technological success. The result is admirable, though naturally to each reader some of the sections will appeal more than others. About a third of the whole is taken up with the structure of matter and radiation; there must be many readers of THE LANCET, in whom X rays, ultra-violet light, and wireless have surprised an imperfect knowledge of modern physics, and they will find the diagram of the range of various electro-magnetic waves, which forms the frontispiece, well worth the modest price of the volume. Dr. Simpson on the water in the atmosphere and Dr. Tate Regan on Darwinism strike particularly good notes as essayists, and it is pleasant to find Prof. Poulton still standing on the impregnable rock of natural selection in his short discourse on mimicry.

Commercial Exhibits.

Many of the series of exhibits in the Chemical Section at Wembley, organised by the Association of British Chemical Manufacturers, are well worth the inspection of medical men; there may be no special appeals to clinical medicine or therapeutics save in a few directions, but to preventive hygiene there are many. Such matters as the materials for house construction and their preservation, for road manufacture, for paving and for fire-proofing are of growing importance to doctors, as questions of domestic accommodation, sanitary environment, and convenient transport become more intimately associated with public health. Such stalls as those of Messrs. Albright and Wilson, Messrs. Brunner Mond, Messrs. Chance and Hunt, and Messrs. Naylor Brothers can be studied with advantage, while the products exhibited by the Gas Light and Coke Company and the South Metropolitan Gas Company will be also found of practical interest.

The fine display of Messrs. Burroughs Wellcome is of considerable historic interest to medical men. At the stand of this firm, and still bearing the dents of hard usage and particles of earth from the world's highest mountain, a relic of the Mount Everest expeditions of 1921, 1922, and 1924 may be seen—it consists of the "tabloid" medicine chest as supplied for use in these huge adventures. The medical officer in charge of each of the expeditions has sung the praises of this chest, which in 1922 travelled over 1000 miles by yak transport—the most trying in the world, and has served for three successive expeditions. It is still fit to do duty with a fourth. The case which accompanied R 34 in the first airship flight from England to America and back is also shown, prompting the representatives of the firm to anticipate a distant time when leviathans of the air will carry their own physician and medicines for a passenger list approaching in length that of a Victorian liner. Here also is the actual tube of solidified ginger essence, one of the four phials of "tabloid" medicines, which Peary carried in his last dash to the North Pole. Here are the cases which Amundsen and Scott carried to the South Pole in 1911–12. One case bears in Amundsen's handwriting the inscription, "Sydpolem, 14–12–1911." The other is sadly devoid of inscription. What may be termed "the explorers' corner" in this display also contains dioramas of the following pioneer events: Stanley crossing darkest Africa, the final attempt to climb Mount Everest, Bleriot flying the Channel, Alcock flying the Atlantic, Ross Smith on the final stage of his flight to Australia, the U.S.A. world-flight airmen arriving at Croydon. In every instance the original "tabloid" medical equipment which served these pioneers on their travels is shown.

At the stand of the Clayton Aniline Co. everything is designed to remind us of the discovery which led to the manufacture of aniline on a commercial scale, and gave the first impetus to the development of the colour industry. This was in the "fifties" of the last century, and in 1875 the Clayton Aniline Company, Limited, was founded for the manufacture principally of aniline oil and salt. Ever since the company has added to its activities, more or less as a natural outcome, the manufacture of dyestuffs. Although at first aniline was used almost exclusively as the starting-point in the production of synthetic dyestuffs, only a small proportion of the total dyes now produced are actually derived from aniline, but the term "aniline dyes" is used as a popular expression to cover practically all coal-tar intermediates and dyes. The Clayton Aniline Co.'s exhibit does not rely only on the number of colours shown, but calls attention to the evidence supplied of the accumulated knowledge of years of research and experience in a most intricate industry. Some 250 dyes appear of various hues and shades, and are shown in their application to cotton, woollen, silk and artificial silk fabrics, leather, and paper. There are colours for practically all industries, textiles, leather, glass, rubber, and paper, each providing opportunities for the chemist. The Clayton Aniline Company also shows the products manufactured in England of the "Ciba" brand pharmaceutical specialties, one of which, "Phytin," is symbolised at the stall in an attractive statuette, the work of Miss Phyllis Mott. Cases are being shown of Dial, Didial, and Elbon "Ciba" tablets, of other products whose therapeutic effects have been noticed in our columns, such as Lipoiodine "Ciba" tablets and Digifoline tablets—this last being a preparation of vegetable origin, containing the glucosides of digitalis leaf in their natural proportions, free from inert or harmful extractives.

A large range of technical products is displayed by various firms whose names are widely associated in the public mind with activity in the production of bleaching powders or perfumes. Among these are Messrs. Boake Roberts and Co., who show, in addition to many essential oils and terpeneless oils used in perfumery, a range of sulphur dioxide salts with a wide technical application, and a recrystallised menthol which conforms to B.P. requirement. The Castner-Kellner Alkali Company issue a number of interesting pamphlets upon chlorine derivatives and products in relation to public health; the Erasmic Company, Ltd., show many samples of scented preparations in a striking colour scheme; Messrs. J. and E. Atkinson show a complete range of toilet preparations; Messrs. Thomas Fell and Co. specialise in pot-pourri; the Graesser-Monsanto Chemical Works include on their stall some fine specimens of phenol and cresol derivatives; the various employment of hydrogen peroxide inspire the exhibits of Messrs. B. Laporte, Ltd.; bismuth salts occupy a prominent position at the stall of Messrs. Thomas Tyrer and Co.; the stand of the United Alkali Co., Ltd., indicates the various products of the company both in heavy and refined chemicals and in dye products; Messrs. Edwards and Gritton call attention to their medicinal paraffin prepared from Russian petroleum; the Electro-Bleach and By-products, Ltd., show high grades of bleaching powder and caustic soda, as well as Sesqui carbonate of soda, and samples of anhydrous ferric chloride and an especially fine carbonate of lime; and Messrs. Grieve and Gordon make a feature of eucalyptus preparations. Messrs. Charles Roberts and Co. exhibit models of standard tank wagons for the conveyance of all forms of chemical liquids.

Messrs. G. M. Taylor show a fine range of artificial eyes, sadly required in post-war days; and Messrs. Baird and Tatlock, at a stand fitted by the firm's own men, and made at their own works, demonstrate the materials used by them in fitting up laboratories. The finish is that normally used in laboratories, and the same type of benches and finish are in use in the modern laboratory exhibited by the Ministry of Health.

The apparatus on view, it will be seen, covers a wide range from chemistry to psychology, from mechanics to bacteriology.

AN OVERCROWDED MENTAL HOSPITAL.—The Commissioners of the Board of Control state that the Salop Mental Hospital, upon which otherwise they report favourably, is overcrowded. The accommodation is for 313 males and 388 females, but the average number resident during the past year has been 347 and 424 respectively. The construction of the building will not allow of proper classification, and the Commissioners say that the hospital can only be brought into line with similar institutions of more modern construction by the erection of an admission hospital with cottages for recovering and convalescent cases. The accommodation for nurses is "far from ideal."

[1] Phases of Modern Science. By various authors. London: A. and F. Denny, Ltd. 1925. Pp. 232. 3*s.* 6*d.*